



San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT



JUN 08 2011

Mr. Mathew Towers
O'Neill Beverages Company
8418 S. Lac Jac Avenue
Parlier, CA 93654

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # C-629
Project # 1103740**

Dear Mr. Towers:

Enclosed for your review is the District's analysis of applications for Authorities to Construct (ATC's) for the facility identified above. The applicant is requesting that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. These ATC's authorize the installation of 62 new wine fermentation and wine storage tanks.

After addressing any EPA comments made during the 45-day comment period, the ATC's will be issued to the facility with Certificates of Conformity. Prior to operating with modifications authorized by the ATC's, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

Enclosures

c: Dustin Brown, Permit Services

Sayed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
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Southern Region
34946 Flyover Court
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San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT



JUN 08 2011

Gerardo C. Rios, Chief
Permits Office
Air Division
U.S. EPA - Region IX
75 Hawthorne St.
San Francisco, CA 94105

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # C-629
Project # 1103740**

Dear Mr. Rios:

Enclosed for your review is the District's engineering evaluation of applications for Authorities to Construct (ATC's) for O'Neill Beverages Company located at 8418 S. Lac Jac Avenue in Parlier, CA, which has been issued a Title V permit. O'Neill Beverages Company is requesting that Certificates of Conformity, with the procedural requirements of 40 CFR Part 70, be issued with this project. These ATC's authorize the installation of 62 new wine fermentation and wine storage tanks.

Enclosed is the engineering evaluation of this application along with copies of proposed ATC's C-629-432-0 through C-629-493-0 with Certificates of Conformity. After demonstrating compliance with the ATC's, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 45-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

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c: Dustin Brown, Permit Services

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San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT



JUN 08 2011

Mike Tollstrup, Chief
Project Assessment Branch
Air Resources Board
P O Box 2815
Sacramento, CA 95812-2815

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # C-629
Project # 1103740**

Dear Mr. Tollstrup:

Enclosed for your review is the District's analysis of applications for Authorities to Construct (ATC's) for the facility identified above. The applicant is requesting that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. These ATC's authorize the installation of 62 new wine fermentation and wine storage tanks.

Enclosed is the engineering evaluation of this application along with copies of proposed ATC's # C-629-432-0 through C-629-493-0 with Certificates of Conformity. After demonstrating compliance with the ATC's, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 30-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

Enclosures

c: Dustin Brown, Permit Services

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Fresno Bee

**NOTICE OF PRELIMINARY DECISION
FOR THE ISSUANCE OF AUTHORITY TO CONSTRUCT AND
THE PROPOSED SIGNIFICANT MODIFICATION OF FEDERALLY
MANDATED OPERATING PERMIT**

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Air Pollution Control District solicits public comment on the proposed issuance of Authorities to Construct (ATC's) to O'Neill Beverages Company for its winery located at 8418 S. Lac Jac Avenue in Parlier, California. These ATC's authorize the installation of 62 new wine fermentation and wine storage tanks.

The District's analysis of the legal and factual basis for this proposed action, project #1103740, is available for public inspection at http://www.valleyair.org/notices/public_notices_idx.htm and the District office at the address below. This will be the public's only opportunity to comment on the specific conditions of the modification. If requested by the public, the District will hold a public hearing regarding issuance of this modification. For additional information, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900. Written comments on the proposed initial permit must be submitted within 30 days of the publication date of this notice to DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 1990 E. GETTYSBURG AVE, FRESNO, CA 93726-0244.

San Joaquin Valley Air Pollution Control District

Authority to Construct

Application Review

Installation of New Winery Fermentation and Storage Tanks

Facility Name: O'Neill Beverages Company LLC Date: June 7, 2011
Mailing Address: 8418 S. Lac Jac Avenue Engineer: Dustin Brown
Parlier, CA 93654 Lead Engineer: Joven Refuerzo
Contact Person: Matt Towers
Telephone: (559) 638-3544
Fax: (559) 638-7148
Email: mtowers@oneillwine.com
Application #'s: C-629-432-0 through '-493-0
Project #: 1103740
Deemed Complete: March 14, 2011

I. PROPOSAL

O'Neill Beverages Company requests 62 Authority to Construct (ATC) permits for the installation of new red and white wine fermentation and wine storage tanks. The applicant is proposing to add the new red and white wine fermentation tanks into the existing specific limiting condition (SLC) limiting the annual wine fermentation VOC emissions from all wine fermentation tanks at their facility of 410,502 lb-VOC/year. A new SLC of 9,333 lb-VOC/year will be established for the 62 new wine storage tanks being installed in this project.

O'Neill Beverages Company received their Title V Permit for this stationary source on July 31, 2010. This modification can be classified as a Title V significant modification pursuant to Rule 2520, Sections 3.20 and 3.29, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authorities to Construct. O'Neill Beverages Company must apply to administratively amend their Title V Operating Permit to include the requirements of the ATC's issued with this project.

II. APPLICABLE RULES

District Rule 2201 New and Modified Stationary Source Review Rule (12/18/08)
District Rule 2520 Federally Mandated Operating Permits (6/21/01)
District Rule 4001 New Source Performance Standards (4/14/99)
District Rule 4002 National Emissions Standards for Hazardous Air Pollutants (5/20/04)
District Rule 4101 Visible Emissions (2/17/05)
District Rule 4102 Nuisance (12/17/92)
District Rule 4694 Wine Fermentation and Storage Tanks (12/15/05)
California Health and Safety Code Section 41700 (Health Risk Assessment)
California Health & Safety Code Section 42301.6 (School Notice)

Public Resources Code 21000-21177 California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA
Guidelines

III. PROJECT LOCATION

This facility is located at 8418 S. Lac Jac Road in Parlier, CA.

The District has verified that the equipment is located within 1,000 feet of the outer boundary of a K-12 school. However, as discussed within this document and in the health risk assessment results in Attachment I, the proposed winery fermentation and storage tanks being installed in this project do not result in an increase in Hazardous Air Pollutant (HAP) emissions. Therefore, in accordance with the California Health and Safety Code, Section 42301.6, a school notice is not required.

IV. PROCESS DESCRIPTION

O'Neill Beverages Co. produces both red and white table wines, as well as other specialty wine products, from the fermentation of grapes. During the "crush season", typically from late August to late November, both red and white grapes are received by truck and delivered to a crusher-stemmer which serves to crush the grapes and remove the stems. In the case of red wines, the resultant juice (termed "must" and containing the grape skins, pulp and seeds) is pumped to red wine fermentation tanks for fermentation, a batch process. The red wine fermentation tanks are specifically designed to ferment the must in contact with the skins and to allow the separation of the skins and seeds from the wine after fermentation. In the case of white wines, the must is first sent to screens and presses for separation of grape skins and seeds prior to fermentation. After separation of the skins and seeds, the white must is transferred to a fermentation tank. White wine fermentation can be carried out in a tank without design provisions for solids separation since the skins and seeds have already been separated.

After transfer of the must (red or white) to the fermentation tank, the must is inoculated with yeast which initiates the fermentation reactions. During fermentation, the yeast metabolizes the sugar in the grape juice, converting it to ethanol and carbon dioxide and releasing heat. Although fermentation temperatures vary widely depending upon the specific quality and style of the wine, temperature is typically controlled to maintain a temperature of 45-70° F for white wine fermentation and 70-85° F for red wine fermentation. The sugar content of the fermentation mass is measured in °Brix (weight %) and is typically 22-26° for unfermented grape juice, dropping to 4° or less for the end of fermentation. Finished ethanol concentration is approximately 10 to 14 percent by volume. Batch fermentation requires 3-5 days per batch for red wine and 1-2 weeks per batch for white wine. VOC's are emitted during the fermentation process along with the CO₂. The VOC's consist primarily of ethanol along with minor fermentation byproducts.

Following the completion of fermentation, white wine is transferred directly to storage tanks. Red wine is first directed to the presses for separation of solids and then routed to the storage tanks. All tanks in the winery typically operate as two separate emissions units; 1) a fermentation operation during which the tank is vented directly to the atmosphere to release the evolved CO₂ byproduct from the fermentation reaction; and 2) a storage operation where the tank is closed to minimize contact with air and the contents is often refrigerated. Post-fermentation operations are conducted in the tanks including cold stabilization, racking, filtration, etc which result in a number of inter-tank transfers of the wine during this period leading up to the bottling or bulk shipment of the finished product. Storage operations are conducted year-round. VOC emissions occur primarily as a result of the inter-tank wine transfers which occur during the post fermentation operations.

V. EQUIPMENT LISTING

Equipment Descriptions:

O'Neill Beverages Company is proposing to install 62 new winery tanks that will be authorized to be utilized for wine fermentation operations and wine storage operations. A summary of the post project equipment descriptions for each of the 62 new tanks can be found in Attachment A.

VI. EMISSION CONTROL TECHNOLOGY EVALUATION

VOC's (ethanol) are emitted from wine storage tanks as a result of both working losses (which occur when the liquid level in the tank changes) and breathing losses (expansion and contraction effects due to temperature variations). The proposed pressure/vacuum valve limits these emissions by requiring the maximum amount of variation in tank pressure before allowing the tank to vent to the atmosphere or allowing air admission to the tank. When wine storage tanks are insulated or located in a climate controlled building, breathing losses are considered to be negligible.

The temperature of the fermentation is controlled to maintain an average fermentation temperature not exceeding 95 °F which avoids higher temperatures that might be damaging to the yeast cells and reduces the potential for an out-of-control fermentation reaction in the tank. Temperature control serves to minimize VOC emissions relative to a tank without temperature control since the potential emissions increase with fermentation temperature.

VII. GENERAL CALCULATIONS

A. Assumptions

- The maximum operating schedule for this facility is 24 hours/day and 365 days/year.
- Winery tanks generally consist of two emissions units; 1) a fermentation tank emissions unit and 2) a wine storage tank emissions unit.
- All tanks will be classified as red and white wine fermentation, red and white wine storage and distilled spirit storage tanks.

Fermentation Operations:

- Total annual VOC emissions from all wine fermentation operations at this facility shall not exceed 410,502 pounds per year (current facility wide limit, no proposed changes by the applicant).
- Daily VOC fermentation emissions will be determined using a worst case of one tank turnover per day (proposed by the applicant).

Storage Operations:

- The maximum daily wine storage throughputs were provided by the applicant and the annual wine storage throughputs will be determined by the applicant in order to ensure that they stay under the new wine storage VOC emission limit established under this project (9,333 lb-VOC/year).
- The maximum ethanol content of the wine stored in each tank will be set at a worst case of 23.9% (proposed by the applicant).
- Daily breathing losses are assumed to be negligible from the storage operations since all storage tank emissions units being installed by this project are insulated and equipped with a pressure/vacuum relief valve or are being installed inside of a climate controlled building.

B. Emission Factors

The required emission factors for wine fermentation and storage operations are taken from District FYI-114, *Estimating VOC Emissions from Winery Tanks*, with storage tank emission factors interpolated from Table 1:

Red Wine Fermentation:

Daily: 3.46 lb-VOC/1000 gallons tank capacity
Annual: 6.2 lb-VOC/1000 gallons annual throughput

White Wine Fermentation:

Daily: 1.62 lb-VOC/1000 gallons tank capacity
Annual: 2.5 lb-VOC/1000 gallons annual throughput

Wine Storage @ 23.9% Ethanol:

Daily: 0.490 lb-VOC/1000 gallons daily throughput

Annual:

The annual VOC emissions from the wine storage operations in these tanks will be determined using the emission factors listed in FYI 114 and generating a curvefit equation from the known values. The curvefit equation generated from the known values in FYI 114 was determined to be as follows (see additional information in Attachment C):

$$\text{VOC Emission (lb-VOC/1000 gallons throughput)} = 1.705259 \times [(\% \text{ ethanol content of wine stored})^{1.090407}]$$

D. Calculations

1. Pre-Project Potential to Emit (PE1)

Since this tanks are all new emissions units, the PE1 = 0 for all pollutants.

2. Post-Project Potential to Emit (PE2)

Daily PE (PE2):

Fermentation Operations:

The daily VOC emissions from the fermentation of wine in each of these tanks can be determined using the emission factor listed above and the daily wine fermentation throughput based on one tank turnover per day. Since the red wine emission factors represent the worst case VOC emissions, they will be used in all of the daily potential emission calculations for the purposes of this project.

$$\text{Daily VOC PE}_{\text{Fermentation}} \text{ (lb/day)} = \text{Tank Volume (gal)} \times \text{VOC EF (lb-VOC/10}^3 \text{ gal)} \times 1 \text{ TO (gal/day)}$$

The summary of the daily VOC PE2 calculations for each of the new tanks while being used for wine fermentation can be found in Attachment B.

Wine Storage Operations:

The daily VOC emissions from the storage of wine in each of these tanks can be determined using the emission factors listed above and the daily wine storage throughput limits proposed by the applicant as a part of this project.

$$\text{Daily VOC PE}_{\text{Storage}} = \text{EF (lb-VOC/1,000 lb gallons)} \times \text{Throughput (gallons/day)}$$

The summary of the daily VOC PE2 calculations for each of the new tanks while being used for wine storage can be found in Attachment B.

Annual PE (APE2):

Fermentation Operations:

The applicant is proposing to include these new fermentation tanks in the existing specific limiting condition (SLC) with all the other fermentation tanks at this facility. Therefore:

$$\text{PE2}_{\text{fermentation}} \text{ (existing + new tanks)} = \text{PE1}_{\text{fermentation}} \text{ (existing tanks)} = 410,502 \text{ lb-VOC/yr}$$

Storage Operations:

The applicant is proposing to establish a combined annual VOC limit for all of the wine storage operations for the new tanks included within this project. They are proposing that the combined annual total VOC emissions from all the new storage tanks be equal to 9,333 lb/year. Therefore, the post project annual VOC emissions will be set equal to the value listed below and no further discussion is required.

Annual Storage VOC PE = 9,333 lb/year

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

SSPE1 calculations are necessary to aid the following determinations:

- If the facility is becoming a new Major Source,
- An offset threshold will be surpassed, or
- A Stationary Source Increase in Permitted Emissions (SSIPE) public notice is triggered

This project only concerns VOC emissions. Pursuant to information in the facility files, the stationary source is already above the Offset and Major Source Thresholds for VOC emissions. Additionally, since the only annual emissions change resulting from this project are the annual VOC emission increases associated with the storage operations of the 62 new tanks and this facility has not banked any emissions, an SSIPE determination can be made without calculating the SSPE1. Therefore, SSPE1 calculations are not required and will not be performed for the purposes of this project.

4. Post-Project Stationary Source Potential to Emit (SSPE2)

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

SSPE2 calculations are necessary to aid the following determinations:

- If the facility is becoming a new Major Source,
- An offset threshold will be surpassed, or
- A Stationary Source Increase in Permitted Emissions (SSIPE) public notice is triggered

As shown above, the proposed project results in an increase in VOC emissions associated with the 62 new wine storage tanks within this project. Therefore, O'Neill Beverages Company will remain above the major source threshold of 50,000 lb/year for VOC emissions after this project and the facility is not becoming a Major Source and an offset threshold will not be surpassed as a result of this project. Therefore, SSPE2 calculations are not required and will not be performed for the purposes of this project.

5. Major Source Determination

Pursuant to Section 3.24 of District Rule 2201, a Major Source is a stationary source with post-project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. However, Section 3.24.2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site."

	VOC (lb/year)
Pre-Project SSPE (SSPE1)	>20,000
Post Project SSPE (SSPE2)	>20,000
Major Source Threshold	20,000
Major Source?	Yes

As shown in the table above, this source is an existing Major Source for VOC emissions and will remain above the Major Source threshold for VOC emissions after this project.

6. Baseline Emissions (BE)

Per District Rule 2201, Section 3.7, the baseline emissions, for a given pollutant, shall be equal to the pre-project potential to emit for:

- Any emission unit located at a non-major source,
- Any highly utilized emission unit, located at a major source,
- Any fully-offset emission unit, located at a major source,
- Any clean emission unit located at a major source, or
- The historical actual emissions (HAE) for emission units not covered by the categories listed above.

a. BE VOC

Units Located at a Non-Major Source

As shown in Section VII.C.5 above, the facility is a major source for VOC emissions.

Highly-Utilized Emissions Units, located at a Major Source

Due to the nature of winery operations, excess tank capacity is installed at wineries such that the actual usage is usually significantly less than the potential operation. Therefore, the tanks in this project are assumed to not be Highly-Utilized Emissions Units.

Fully Offset Emissions Units, located at a Major Source

Offsets were previously provided for the storage tank emissions units for permit units C-629-289-0 through '-320-0. Therefore these are Fully Offset Emissions Units. No other units affected by this project are Fully Offset Emissions Units.

Clean Emissions Unit, Located at a Major Source

Existing Fermentation Tanks Included in VOC SLC:

Pursuant to Rule 2201, Section 3.12, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

All of the fermentation tanks at this facility meet the District's current achieved-in-practice BACT for fermentation tanks. Therefore all fermentation tank emissions units are *Clean Emissions Units* pursuant to District Rule 2201 and, for the combined fermentation emissions of all of the existing tanks in the VOC SLC:

$$\Sigma BE_{\text{fermentation}} = \Sigma PE1_{\text{fermentation}} = 410,502 \text{ lb-VOC/year}$$

New Fermentation and Storage Tanks:

Since these tanks are new emissions units, $BE = PE1 = HAE = 0$ for all pollutants.

7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "*any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act.*"

As discussed in Section VII.C.5 above, the facility is an existing Major Source for VOC; however, the project by itself would need to be a significant increase in order to trigger a Major Modification. Post project, the new fermentation units will be part of the overall fermentation tank SLC which has an existing emission limit of 410,502 lb-VOC per year. Since this project does not propose a change in the SLC emission limit, post project fermentation emissions from all tanks at this facility will be limited to 410,502 lb-VOC per year. However, since the new fermentation tanks add physical capacity to the winery but do not operate independently, fermentation PE for the new tanks may be taken to be $(PE2-PE1)_{all\ tanks}$ which is the change in Potential to Emit for fermentation from all tanks at the winery (in the absence of an SLC emission limit) resulting from the presence of the new tanks in the post project facility configuration.

Per Attachment F,

$$PE1_{ALLTANKS(Fermentation)} = 535,382 \text{ lb-VOC/year}$$

Per Attachment F,

$$PE2_{ALLTANKS(Fermentation)} = 581,727 \text{ lb-VOC/yr}$$

$$PE2_{N(Fermentation)} = (PE2-PE1)_{ALLTANKS} = 46,345 \text{ lb-VOC/yr}$$

The storage tank emission units associated with this project are all new emission units. Post project, the storage emission units will be limited to 9,333 lb-VOC/yr by an SLC. Therefore,

$$PE2_{N(Storage)} = 9,333 \text{ lb-VOC/yr}$$

And,

$$PE2_N = PE2_{N(Fermentation)} + PE2_{N(Storage)}$$

$$PE2_N = 46,345 + 9,333 = 55,678 \text{ lb-VOC/yr}$$

Since this project only involves new emissions units,

$$\text{Historical Actual Emissions} = HAE = 0 \text{ lb-VOC/yr}$$

Therefore,

$$PE - HAE = 55,678 \text{ lb-VOC/yr}$$

The emissions unit(s) within this project have a total potential to emit for VOC which is greater than SB 288 Major Modification thresholds (see table below). Therefore, SB 288 Major Modification calculation is required.

SB288 Major Modification Thresholds (Existing Major Source)			
Pollutant	Project PE (lb/year)	Threshold (lb/year)	Major Modification?
NO _x	0	50,000	No
SO _x	0	80,000	No
PM ₁₀	0	30,000	No
VOC	55,678	50,000	Yes

SB 288 Major Modification Calculation

No other creditable emission increases or decreases have occurred at this facility within the last 5 years. Therefore, the Net Emission Increase (NEI) is:

$$NEI = PE - HAE = 55,678 \text{ lb-VOC/yr}$$

Since 55,678 > 50,000, this project is an SB 288 Major Modification for VOC emissions.

8. Federal Major Modification

District Rule 2201, Section 3.17 states that SB 288 major modifications are also federal major modifications unless they qualify for a "Less-Than-Significant Emissions Increase" exclusion.

A Less-Than-Significant Emissions Increase exclusion is for an emissions increase for the project, or a Net Emissions Increase for the project (as defined in 40 CFR 51.165 (a)(2)(ii)(B) through (D), and (F)), that is not significant for a given regulated NSR pollutant, and therefore is not a federal major modification for that pollutant.

- To determine the post-project projected actual emissions from existing units, the provisions of 40 CFR 51.165 (a)(1)(xxviii) shall be used.
- To determine the pre-project baseline actual emissions, the provisions of 40 CFR 51.165 (a)(1)(xxxv)(A) through (D) shall be used.
- If the project is determined not to be a federal major modification pursuant to the provisions of 40 CFR 51.165 (a)(2)(ii)(B), but there is a reasonable possibility that the project may result in a significant emissions increase, the owner or operator shall comply with all of the provisions of 40 CFR 51.165 (a)(6) and (a)(7).

- Emissions increases calculated pursuant to this section are significant if they exceed the significance thresholds specified in the table below.

Significance Threshold (lb/year)	
Pollutant	Threshold (lb/year)
VOC	0
NO _x	0
PM ₁₀	30,000
SO _x	80,000

The Net Emissions Increases (NEI) for purposes of determination of a "Less-Than-Significant Emissions Increase" exclusion will be calculated below to determine if this project qualifies for such an exclusion.

Net Emission Increase for New Units (NEI_N)

Per 40 CFR 51.165 (a)(2)(ii)(D) for new emissions units in this project,

$$NEI_N = PE2_N - BAE$$

Since these are new units, BAE for these units is zero and,

$$NEI_N = PE2_N$$

As established under Section VII.7 above,

$$PE2_N = 55,678 \text{ lb/year}$$

Thus,

$$NEI_N = PE2_N = 55,678 \text{ lb-VOC/year}$$

Net Emission Increase for Existing Units (NEI_E)

As discussed in Attachments F and G, tanks operating in a winery are not truly independent emissions units and thus their potential annual emissions must be established with consideration of all the other associated tanks in the facility. As calculated above, PE2_N, is determined as the difference between the post project and pre project potential emissions from the wine production operation based on the collective physical capacity of the processing equipment at the facility. PE2_N thus represents the maximum potential increase in actual emissions resulting from this project. As well, this project will not cause any other debottlenecking of the facility's operations which would have the potential for additional emissions.

The NEI for this project is greater than the Federal Major Modification threshold of 0 lb-VOC/year. Therefore, this project does not qualify for a "Less-Than-Significant Emissions Increase" exclusion and is thus determined to be a Federal Major Modification.

VIII. COMPLIANCE

District Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following*:

- a. Any new emissions unit with a potential to emit exceeding two pounds per day,
- b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in a SB288 Major Modification or a Federal Major Modification.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units – PE > 2 lb/day

Fermentation Operations:

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install a 62 new wine fermentation tanks, each with a PE greater than 2 lb/day for VOC emissions. Therefore, BACT is triggered for VOC emissions from each of the new wine fermentation tanks.

Storage Operations:

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install a 62 new wine and wine spirits storage tanks, each with a PE greater than 2 lb/day for VOC emissions. Therefore, BACT is triggered for VOC emissions from each of the new wine storage tanks.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore BACT is not triggered.

c. Modification of emissions units – AIPE > 2 lb/day

As discussed in Section I above, there are no modified emissions units associated with this project; therefore BACT is not triggered.

d. SB288/Federal Major Modification

As discussed in Section VII.C.7 above, this project constitutes an SB 288 Major Modification and a Federal Major Modification for VOC emissions; therefore BACT is triggered for VOC for all emissions units in the project.

2. BACT Guideline

Fermentation Operations:

BACT Guideline 5.4.14, 1st quarter 2011, applies to wine fermentation tanks. O'Neill Beverages Company is proposing to install 62 new wine fermentation tanks within this project. Therefore, BACT Guideline 5.4.13 is applicable to the wine storage tanks and no further discussion is required (BACT Guideline 5.4.14 included in Attachment D).

Storage Operations:

BACT Guideline 5.4.13, 1st quarter 2011, applies to wine storage tanks. O'Neill Beverages Company is proposing to install 62 new wine storage tanks. Therefore, BACT Guideline 5.4.13 is applicable to the wine storage tanks and no further discussion is required (BACT Guideline 5.4.13 included in Attachment E).

3. Top-Down BACT Analysis

In accordance with Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Fermentation Operations:

Pursuant to the attached Top-Down BACT Analysis (see Attachment D), BACT is satisfied with the following:

VOC: Temperature-controlled open top tank with maximum average fermentation temperature of 95 deg F.

Each of the new wine fermentation tanks operated at this facility will be a temperature controlled tank with a maximum average fermentation temperature of 95 degrees F. Therefore, the proposed wine fermentation tanks meet the BACT requirements for this class and category of operation and no further discussion is required.

The following condition will be included on the ATC's to ensure continued compliance with the BACT requirements:

- The average fermentation temperature of each batch of must fermented in this tank shall not exceed 95 degrees Fahrenheit, calculated as the average of all temperature measurements for the batch taken at least every 12 hours over the course of the fermentation. [District Rule 2201]

Storage Operations:

Pursuant to the attached Top-Down BACT Analysis (see Attachment E), BACT is satisfied with the following:

VOC: Insulation or Equivalent⁽¹⁾, Pressure Vacuum Relief Valve (PVRV) set within 10% of the maximum allowable working pressure of the tank' "gas-tight" operation; and continuous storage temperature not exceeding 75 degrees F, achieved within 60 days of completion of fermentation.

Each of the wine storage tanks operated at this facility is equipped with insulation or operated inside of an enclosed building, is equipped with a PVRV set to within 10% of the maximum allowable working pressure of the tank; operates in a gas-tight condition and the continuous storage temperature does not exceed 75 degrees F within 60 days of the completion of the fermentation cycle. Therefore, the proposed wine storage tanks meet the BACT requirements for this class and category of operation and no further discussion is required.

The following conditions will be included on the ATC's to ensure continued compliance with the BACT requirements:

- When used for wine storage, this tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694]
- The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rules 2201 and 4694]

B. Offsets

1. Offset Applicability

Pursuant to Section 4.5.3, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the Post Project Stationary Source Potential to Emit (SSPE2) equals to or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

⁽¹⁾ Tanks made of heat-conducting materials such as stainless steel may be insulated or stored indoors (in a completely enclosed building, except for vents, doors and other essential openings) to limit exposure to diurnal temperature variations.

The following table compares the post-project facility-wide annual emissions in order to determine if offsets will be required for this project.

Pollutant	SSPE2 (lb/yr)	Offset Threshold Levels (lb/yr)	Offsets Required?
VOC	> 50,000	20,000	Yes

2. Quantity of Offsets Required

As discussed above, the facility is an existing Major Source for VOC and the SSPE2 is greater than the offset threshold; therefore offset calculations will be required for this project.

VOC Emissions:

Per Sections 4.7.1 and 4.7.3, the quantity of offsets in pounds per year for VOC is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = $(\Sigma[PE2 - BE] + ICCE) \times DOR$, for all new or modified emissions units in the project,

Where,

PE2 = Post Project Potential to Emit, (lb/year)

BE = Baseline Emissions, (lb/year)

ICCE = Increase in Cargo Carrier Emissions, (lb/year)

DOR = Distance Offset Ratio, determined pursuant to Section 4.8

Offsets Required (lb/year) = $([419,833 \text{ lb/year} - 410,502] + 0) \times DOR$
= 9,333 lb-VOC/year x DOR

Calculating the appropriate quarterly NO_x emissions to be offset without the distance offset ratio is as follows:

	1 st Quarter (lb/qtr)	2 nd Quarter (lb/qtr)	3 rd Quarter (lb/qtr)	4 th Quarter (lb/qtr)	Total (lb/year)
VOC	2,333	2,333	2,333	2,334	9,333

Pursuant to Section 4.8 of District Rule 2201, the distance offset ratio for NO_x and VOC emissions shall be 1.5:1 for new major sources and federal major modifications. Since this project triggers a federal major modification, the District Rule 2201 DOR will be 1.5:1.

Using an offset distance ratio of 1.5:1, the amount of NO_x ERC's that needs to be withdrawn is:

Offsets Required = 9,333 lb-VOC/year x 1.5

Offsets Required = 14,000 lb-VOC/year

Calculating the appropriate quarterly emissions to be offset is as follows:

	<u>1st Quarter</u> (lb/qtr)	<u>2nd Quarter</u> (lb/qtr)	<u>3rd Quarter</u> (lb/qtr)	<u>4th Quarter</u> (lb/qtr)	<u>Total</u> (lb/year)
VOC	3,500	3,500	3,500	3,500	14,000

The applicant has stated that the facility plans to use ERC Certificate S-3571-1 to offset the increases in VOC emissions associated with this project. The above certificate has available quarterly VOC credits as follows:

Offset Proposal					
	<u>1st Quarter</u> (lb/qtr)	<u>2nd Quarter</u> (lb/qtr)	<u>3rd Quarter</u> (lb/qtr)	<u>4th Quarter</u> (lb/qtr)	<u>Total</u> (lb/year)
ERC # S-3571-1	3,500	3,500	3,500	3,500	14,000

Therefore, as seen above, the facility has sufficient credits to fully offset the quarterly amount of VOC emissions required for this project.

The following conditions will ensure compliance with the offset requirements of this rule:

- Prior to operating any piece of equipment under Authorities to Construct C-629-432-0 through '493-0, permittee shall provide VOC emission reduction credits for the following quantities of emissions: 1st quarter – 2,333 lb; 2nd quarter – 2,333 lb; 3rd quarter – 2,333 lb; and 4th quarter – 2,334 lb. Offsets shall be provided at a distance ratio of 1.5 to 1. [District Rule 2201]
- ERC certificate number (or any splits from these certificates) S-3571-1 shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct (ATC) shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of the ATC. [District Rule 2201]

C. Public Notification

1. Applicability

Public noticing is required for:

- Any new Major Source, which is a new facility that is also a Major Source,
- SB 288 Major Modifications and Federal Major Modifications,
- Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- Any project which results in the offset thresholds being surpassed, and/or
- Any project with an SSIPE of greater than 20,000 lb/year for any pollutant.

a. New Major Source

A New Major Source is a new facility, which is also a major source. Since this is not a new facility, public noticing is not required for this project for New Major Source purposes.

b. SB 288 Major Modification and Federal Major Modification

As demonstrated in Section VII.C above, this project constitutes an SB 288 Major Modification and a Federal Major Modification for VOC emissions. Therefore, public noticing for SB 288 and Federal Major Modification purposes is required.

c. PE > 100 lb/day

Applications which include a new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. The applicant is proposing to install 62 new wine fermentation and wine storage tanks; 51 of which have a PE greater than 100 lb/day. Therefore, public noticing for PE > 100 lb/day purposes is required.

d. Offset Threshold

Public notification is required if the Pre-Project Stationary Source Potential to Emit (SSPE1) is increased from a level below the offset threshold to a level exceeding the emissions offset threshold, for any pollutant.

The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
VOC	>20,000	>20,000	20,000 lb/year	No

As detailed above, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

e. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any one pollutant. According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i.e. $SSIPE = SSPE2 - SSPE1$.

For the purposes of this project, the difference in SSPE will only result from the changes in emissions associated with the wine and spirits storage units in this project. Therefore, the annual emission rates from the units in this project, not the SSPE for the entire facility, will be used to determine the SSPE.

Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	SSIPE (lb/year)
VOC	9,333	0	9,333

As demonstrated above, the SSIPE was determined to be less than 20,000 lb/year for all pollutants; therefore public noticing for SSIPE purposes is not required.

2. Public Notice Action

As discussed above, public noticing is required for this project for triggering an SB288 Major Modification, Federal Major Modification and VOC emissions in excess of 100 lb/day. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATC's for these new tanks.

D. Daily Emission Limits (DEL's)

Per Sections 3.15 and 5.7.2, daily emission limitations which reflect all applicable emission limits shall be included on all ATC's and PTO's. The following conditions will be placed on the ATC's and PTO's to enforce the requirements of this section:

C-629-432 through '-435:

- Ethanol content of the wine stored in this tank shall not exceed 23.9 percent, by volume. [District Rule 2201]
- The maximum wine storage throughput in this tank shall not exceed 63,600 gallons per day. [District Rule 2201]

C-629-436 through '-439:

- Ethanol content of the wine stored in this tank shall not exceed 23.9 percent, by volume. [District Rule 2201]
- The maximum wine storage throughput in this tank shall not exceed 135,000 gallons per day. [District Rule 2201]

C-629-440 through '-443 and '-445:

- Ethanol content of the wine stored in this tank shall not exceed 23.9 percent, by volume. [District Rule 2201]

- The maximum wine storage throughput in this tank shall not exceed 150,000 gallons per day. [District Rule 2201]

C-629-444:

- Ethanol content of the wine stored in this tank shall not exceed 23.9 percent, by volume. [District Rule 2201]
- The maximum wine storage throughput in this tank shall not exceed 42,500 gallons per day. [District Rule 2201]

C-629-446 through '-459:

- Ethanol content of the wine stored in this tank shall not exceed 23.9 percent, by volume. [District Rule 2201]
- The maximum wine storage throughput in this tank shall not exceed 261,000 gallons per day. [District Rule 2201]

C-629-460 through '-467:

- Ethanol content of the wine stored in this tank shall not exceed 23.9 percent, by volume. [District Rule 2201]
- The maximum wine storage throughput in this tank shall not exceed 196,500 gallons per day. [District Rule 2201]

C-629-468 through '-483:

- Ethanol content of the wine stored in this tank shall not exceed 23.9 percent, by volume. [District Rule 2201]
- The maximum wine storage throughput in this tank shall not exceed 132,000 gallons per day. [District Rule 2201]

C-629-484 through '-493:

- Ethanol content of the wine stored in this tank shall not exceed 23.9 percent, by volume. [District Rule 2201]
- The maximum wine storage throughput in this tank shall not exceed 33,750 gallons per day. [District Rule 2201]

In addition, in order to enforce the applicant's proposed annual VOC limit for all wine fermentation and storage operations at this facility, the following conditions will be included on each of the wine storage tank ATC's within this project:

- The daily VOC emissions for fermentation operations in this tank shall not exceed 3.46 lb/day per 1000 gallons of tank capacity. [District Rule 2201]
- Total annual VOC emissions from all wine fermentation operations at this facility shall not exceed 410,502 lb per year. [District Rule 2201].
- Total annual VOC emissions from wine fermentation operations shall be determined by the following formula: Total annual VOC emissions = (Total Annual Red Wine Production-gal) x (6.2 lb-VOC/1000 gal) + (Total Annual White Wine Production-gal) x (2.5 lb-VOC/1000 gal). [District Rule 2201]
- Combined annual VOC emissions from all storage operations under permit units C-629-432 through C-629-493 shall not exceed 9,333 pounds per year. [District Rule 2201]
- The annual VOC wine storage emission factor for each wine ethanol content shall be calculated using the following equation: $EF = 1.705259 * P^{1.090407}$; where EF is the VOC emission factor in pounds of VOC per 1000 gallons of wine throughput; and P is the volume percent ethanol of the wine being transferred. [District Rule 2201]
- Combined annual VOC emissions from wine storage operations under permit units C-629-289 through C-629-382 shall be determined as the sum of the emissions for each individual wine movement based on the volume transferred in each wine movement and the batch-specific wine storage emission factor calculated using the equation(s) specified within this permit. [District Rule 2201]

E. Compliance Assurance

1. Source Testing

Pursuant to District Policy APR 1705, source testing is not required to demonstrate compliance with Rule 2201.

2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. In addition, recordkeeping is also required for winery tanks pursuant to District Rule 4694, *Wine Fermentation and Storage Tanks*. All records shall be retained on site for a period of at least five years and made available to District inspection upon request. The following conditions will be included on the ATC's and PTO's to ensure continued compliance with the recordkeeping requirements:

- Records shall be retained on-site for a minimum of five years and made available for District inspection upon request. [District Rule 4694]
- For each batch of must fermented in this tank, the operator shall record the fermentation completion date, the total gallons of must fermented, the average fermentation temperature and the uncontrolled fermentation emissions and fermentation emission reductions (calculated per the emission factors given in District Rule 4694). The information shall be recorded by the tank Permit to Operate number and by wine type, stated as either red wine or white wine. [District Rules 2201 and 4694]
- Separate annual records each of total red wine and total white wine produced by fermentation at this facility, based on values reported to the Alcohol and Tobacco Tax and Trade Bureau (TTB), U.S. Department of the Treasury, shall be kept. [District Rules 2201 and 4694]
- When this tank is used for wine storage, daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 2201 and 4694]
- When this tank is used for wine storage, the operator shall record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rules 2201 and 4694]

4. Reporting

No reporting is required to demonstrate compliance with District Rule 2201.

F. Alternative Siting Analysis:

District Rule 2201, Section 4.15.1 requires an alternative siting analysis for any project which constitutes a New Major Source or a Federal Major Modification. As shown above, this project triggers an SB 288 Major Modification and a Federal Major Modification. Therefore, an alternative siting analysis must be performed.

The current project occurs at an existing winery with a pre-project total wine tank volume of 32,381,947 gallons. The applicant proposes to install new winery tanks totaling 2,803,000 gallons in volume, which represents an increase of 9% of the existing total wine tank volume.

In addition to winery tanks, the operation of a winery requires a large number support equipment, services and structures such as raw material receiving stations, crushers, piping, filtering and refrigeration units, warehouses, laboratories, bottling and shipping facilities, and administration buildings.

Since the current project involves only a minimal increase in the winery's total tank volume and no change to any other facets of the operation, the existing site will result in the least possible impact from the project. Alternative sites would involve the relocation and/or construction of various support structures and facilities on a much greater scale, and would therefore result in a much greater impact.

G. Compliance Certification:

Section 4.15.2 of this Rule requires the owner of a new Major Source or a source undergoing a Federal Major Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Sections VIII-Rule 2201-C.1.a and VIII-Rule 2201-C.1.b, this project does constitute a Federal Major Modification, therefore this requirement is applicable. O'Neill Beverages Company statewide compliance certification is included in Attachment H.

H. Air Quality Impact Analysis:

Section 4.14.1 of this Rule requires that an ambient air quality analysis (AAQA) be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. However, since this project involves only VOC and no ambient air quality standard exists for VOC, an AAQA is not required for this project.

District Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. Section 3.29 defines a significant permit modification as a "permit amendment that does not qualify as a minor permit modification or administrative amendment."

Section 3.20.5 states that a minor permit modification is a permit modification that is not a federal major modification, as defined in Rule 2201⁽¹⁾. As discussed above, this project triggers a federal major modification. As a result, the proposed project constitutes a Significant Modification to the Title V Permit pursuant to Section 3.29.

As discussed above, the facility has applied for a Certificate of Conformity (COC); therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued compliance with this rule is expected. The facility shall not implement the changes requested until the final permit is issued. The following conditions will be included on the ATC to ensure continued compliance:

- This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule]
- Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4]

District Rule 4001 New Source Performance Standards

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60. However, no subparts of 40 CFR Part 60 apply to wine fermentation and storage tank operations. Therefore, no further discussion is required.

District Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAP's)

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63. However, no subparts of 40 CFR Part 61 or 40 CFR Part 63 apply to wine fermentation and storage tank operations. Therefore, no further discussion is required.

⁽¹⁾ District Rule 2520, Section 3.20.5 actually states that a project shall not constitute a Title I modification, as defined in Rule 2201. In previous versions of Rule 2201, the term Title I modification was replaced with Federal Major Modification. However, at that time, the terminology in Rule 2520 was not updated to reflect the new Rule 2201 terms. Therefore, even though Rule 2520 references that a project triggering a Title I modification does not qualify as a Title V minor modification, it will be replaced with the term Federal Major Modification for the purposes of this project.

District Rule 4102 Nuisance

Section 4.0 prohibits discharge of air contaminants, which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected. Compliance with the requirements of this rule is ensured by the following condition, currently located on the facility wide permit for this facility:

- No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 - Risk Management Policy for Permitting New and Modified Sources specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

An HRA is not required for a project with a total facility prioritization score of less than or equal to one. According to the Technical Services Memo for this project (Attachment I), the total facility prioritization score including this project was less than or equal to one. Therefore, no future analysis is required to determine the impact from this project and compliance with the District's Risk Management Policy is expected.

District Rule 4694 Wine Fermentation and Storage Tanks

The purpose of this rule is to reduce emissions of volatile organic compounds (VOC) from the fermentation and bulk storage of wine, or achieve equivalent reductions from alternative emission sources. This rule is applicable to all facilities with fermentation emissions in excess of 10 tons-VOC/year. The storage tank provisions of this rule apply to all tanks with capacity in excess of 5,000 gallons.

Section 5.1 requires the winery operator achieve Required Annual Emissions Reductions (RAER) equal to at least 35% of the winery's Baseline Fermentation Emissions (BFE). Per the definition of RAER in Section 3.25 of the Rule, the RAER may be achieved by any combination of Fermentation Emission Reductions (FER), Certified Emission Reductions (CER) or District Obtained Emission Reductions (DOER) as established in the facility's District-approved Rule 4694 Compliance Plan, due every three years on December 1st beginning in 2006. The facility has submitted the required plan to the District and is currently satisfying the required emission reductions in the form of Certified Emission Reductions.

Section 5.2 places specific restrictions on wine storage tanks with 5,000 gallons or more in capacity when such tanks are not constructed of wood or concrete. Section 5.2.1 requires these tanks to be equipped and operated with a pressure-vacuum relief valve meeting all of the following requirements:

- The pressure-vacuum relief valve shall operate within 10% of the maximum allowable working pressure of the tank,
- The pressure-vacuum relief valve shall operate in accordance with the manufacturer's instructions, and
- The pressure-vacuum relief valve shall be permanently labeled with the operating pressure settings.
- The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21.

Therefore, the following conditions will be placed on the permit for each storage tank with capacity greater than 5,000 gallons and not constructed of concrete or wood to ensure compliance with the requirements of Section 5.2.1:

- When used for wine storage, this tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rule 4694]
- When this tank is used for wine storage, the pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21 [District Rule 4694]

Section 5.2.2 requires that the temperature of the stored wine be maintained at or below 75° F.

The following condition will be placed on the permit for each storage tank with capacity greater than 5,000 gallons and not constructed of concrete or wood to ensure compliance with the requirements of Section 5.2.2:

- The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rule 4694]

Every three years, Section 6.1 and 6.2 require the facility to submit a Three-Year Compliance Plan and a Three-Year Compliance Plan Verification respectively. Section 6.3 requires that an Annual Compliance Plan Demonstration be submitted to the District no later than February 1 of each year to show compliance with the applicable requirements of the Rule. Section 6.4 requires that records required by this rule be maintained, retained on-site for a minimum of five years, and made available to the APCO upon request. Section 6.4.3 requires that all monitoring be performed for any Certified Emission Reductions as identified in the facility's Three-Year Compliance Plan and that the records of all monitoring be maintained. The following conditions on the facility-wide permit (C-629-0-1) ensure compliance:

- A Three-Year Compliance Plan that demonstrates compliance with the requirements of Section 5.1 of District Rule 4694 for each year of the applicable compliance period shall be submitted to the District by no later than December 1, 2006, and every three years thereafter on or before December 1. [District Rule 4694]
- A Three-Year Compliance Plan Verification that demonstrates that the Three-Year Compliance Plan elements are in effect shall be submitted to the District by no later than July 1, 2007, and every three years thereafter on or before July 1. [District Rule 4694]
- An Annual Compliance Plan Demonstration that shows compliance with the applicable requirements of this rule shall be submitted to the District by no later than February 1, 2008, and every year thereafter on or before February 1. [District Rule 4694]
- Operators using CER to mitigate fermentation emissions shall perform all monitoring and recordkeeping, as established in their approved Three-Year Compliance Plan, and shall maintain all records necessary to demonstrate compliance. [District Rule 4694]
- The operator shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, or report. Support information includes copies of all reports required by the permit and, for continuous monitoring instrumentation, all calibration and maintenance records and all original strip-chart recordings [District Rule 2520, 9.4.2]

Section 6.4.1 requires that records be kept for each fermentation batch. The following condition will be placed on the ATC for each fermentation tank to ensure compliance:

- For each batch of must fermented in this tank, the operator shall record the fermentation completion date, the total gallons of must fermented, the average fermentation temperature and the uncontrolled fermentation emissions and fermentation emission reductions (calculated per the emission factors given in District Rule 4694). The information shall be recorded by the tank Permit to Operate number and by wine type, stated as either red wine or white wine. [District Rules 2201 and 4694]

Section 6.4.2 requires that weekly records be kept of wine volume and temperature in each storage tank. All tanks in this facility are storage tanks. Therefore, the following conditions will be placed on the permit for each storage tank to ensure compliance with the requirements of Section 6.4.2:

- When this tank is used for wine storage, daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rule 4694]
- When this tank is used for wine storage, the operator shall record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine.[District Rule 4694]

Section 6.4.3 requires that all monitoring be performed for any Certified Emission Reductions as identified in the facility's Three-Year Compliance Plan and that the records of all monitoring be maintained. The following condition on the facility-wide permit (C-629-0-1) ensures compliance:

- Operators using CER to mitigate fermentation emissions shall perform all monitoring and recordkeeping, as established in their approved Three-Year Compliance Plan, and shall maintain all records necessary to demonstrate compliance. [District Rule 4694]

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is located within 1,000 feet of the following school:

School Name: Riverview Elementary School
Address: 8662 S. Lac Jac Avenue
Parlier, CA 93648

However, as discussed within this document and in the health risk assessment results in Attachment I, the proposed winery fermentation and storage tanks being installed in this project do not result in an increase in Hazardous Air Pollutant (HAP) emissions. Therefore, in accordance with the California Health and Safety Code, Section 42301.6, a school notice is not required.

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The County of Fresno (County) is the public agency having principal responsibility for approving the Project. As such, the County served as the Lead Agency for the project. Consistent with CEQA Guidelines §15081, a Mitigated Negative Declaration was prepared and certified by the County.

The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CEQA Guidelines §15381). As a Responsible Agency the District complies with CEQA by considering the Mitigated Negative Declaration prepared by the Lead Agency, and by reaching its own conclusion on whether and how to approve the project (CEQA Guidelines §15096). The District has considered the Mitigated Negative Declaration certified by the County.

The District's engineering evaluation of the project (this document) demonstrates that compliance with District rules and permit conditions would reduce Stationary Source emissions from the project to levels below the District's thresholds of significance for criteria pollutants. Thus, the District concludes that through a combination of project design elements and permit conditions, project specific stationary source emissions will be reduced and mitigated to less than significant levels. The District has determined that no additional findings are required (CEQA Guidelines §15096(h)).

IX. RECOMMENDATION

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period and school noticing period, issue Authorities to Construct C-629-432-0 through '493-0 subject to the permit conditions on the attached draft Authorities to Construct in Attachment J.

X. BILLING INFORMATION

Permit Number	Fee Schedule	Fee Description	Annual Fee
C-629-432-0	3020-05-B	15,900 gallons	\$93
C-629-433-0	3020-05-B	15,900 gallons	\$93
C-629-434-0	3020-05-B	15,900 gallons	\$93
C-629-435-0	3020-05-B	15,900 gallons	\$93
C-629-436-0	3020-05-C	44,800 gallons	\$135
C-629-437-0	3020-05-C	44,800 gallons	\$135
C-629-438-0	3020-05-C	44,800 gallons	\$135
C-629-439-0	3020-05-C	44,800 gallons	\$135
C-629-440-0	3020-05-C	37,500 gallons	\$135
C-629-441-0	3020-05-C	37,500 gallons	\$135
C-629-442-0	3020-05-C	37,500 gallons	\$135
C-629-443-0	3020-05-C	37,500 gallons	\$135
C-629-444-0	3020-05-B	8,500 gallons	\$93
C-629-445-0	3020-05-C	37,500 gallons	\$135
C-629-446-0	3020-05-D	87,000 gallons	\$185
C-629-447-0	3020-05-D	87,000 gallons	\$185
C-629-448-0	3020-05-D	87,000 gallons	\$185
C-629-449-0	3020-05-D	87,000 gallons	\$185
C-629-450-0	3020-05-D	87,000 gallons	\$185
C-629-451-0	3020-05-D	87,000 gallons	\$185

C-629-452-0	3020-05-D	87,000 gallons	\$185
C-629-453-0	3020-05-D	87,000 gallons	\$185
C-629-454-0	3020-05-D	87,000 gallons	\$185
C-629-455-0	3020-05-D	87,000 gallons	\$185
C-629-456-0	3020-05-D	87,000 gallons	\$185
C-629-457-0	3020-05-D	87,000 gallons	\$185
C-629-458-0	3020-05-D	87,000 gallons	\$185
C-629-459-0	3020-05-D	87,000 gallons	\$185
C-629-460-0	3020-05-D	65,500 gallons	\$185
C-629-461-0	3020-05-D	65,500 gallons	\$185
C-629-462-0	3020-05-D	65,500 gallons	\$185
C-629-463-0	3020-05-D	65,500 gallons	\$185
C-629-464-0	3020-05-D	65,500 gallons	\$185
C-629-465-0	3020-05-D	65,500 gallons	\$185
C-629-466-0	3020-05-D	65,500 gallons	\$185
C-629-467-0	3020-05-D	65,500 gallons	\$185
C-629-468-0	3020-05-C	33,000 gallons	\$135
C-629-469-0	3020-05-C	33,000 gallons	\$135
C-629-470-0	3020-05-C	33,000 gallons	\$135
C-629-471-0	3020-05-C	33,000 gallons	\$135
C-629-472-0	3020-05-C	33,000 gallons	\$135
C-629-473-0	3020-05-C	33,000 gallons	\$135
C-629-474-0	3020-05-C	33,000 gallons	\$135
C-629-475-0	3020-05-C	33,000 gallons	\$135
C-629-476-0	3020-05-C	33,000 gallons	\$135
C-629-477-0	3020-05-C	33,000 gallons	\$135
C-629-478-0	3020-05-C	33,000 gallons	\$135
C-629-479-0	3020-05-C	33,000 gallons	\$135
C-629-480-0	3020-05-C	33,000 gallons	\$135
C-629-481-0	3020-05-C	33,000 gallons	\$135
C-629-482-0	3020-05-C	33,000 gallons	\$135
C-629-483-0	3020-05-C	33,000 gallons	\$135
C-629-484-0	3020-05-B	6,750 gallons	\$93
C-629-485-0	3020-05-B	6,750 gallons	\$93
C-629-486-0	3020-05-B	6,750 gallons	\$93
C-629-487-0	3020-05-B	6,750 gallons	\$93
C-629-488-0	3020-05-B	6,750 gallons	\$93
C-629-489-0	3020-05-B	6,750 gallons	\$93
C-629-490-0	3020-05-B	6,750 gallons	\$93
C-629-491-0	3020-05-B	6,750 gallons	\$93
C-629-492-0	3020-05-B	6,750 gallons	\$93
C-629-493-0	3020-05-B	6,750 gallons	\$93

Attachments:

- Attachment A, Post Project Equipment Descriptions
- Attachment B, Daily Wine Fermentation and Storage VOC Calculations
- Attachment C, Annual VOC Emission Factor Curve Fit Equation Determination
- Attachment D, BACT Guideline 5.4.14 and Fermentation Tanks Top Down VOC BACT Analysis
- Attachment E, BACT Guideline 5.4.13 and Storage Tanks Top Down VOC BACT Analysis
- Attachment F, Calculation of the Annual Potential to Emit (PE_{2N}) for New Fermentation Tanks
- Attachment G, Draft Policy for Calculation of Winery Emissions
- Attachment H, O'Neill Beverages Company Statewide Compliance Certification
- Attachment I, Health Risk Assessment Summary
- Attachment J, Draft ATC's

Attachment A

Post Project Equipment Descriptions

Permit	Equipment Description
C-629-432-0	15,900 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R009) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-433-0	15,900 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0010) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-434-0	15,900 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0011) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-435-0	15,900 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0012) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-436-0	44,800 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0013) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-437-0	44,800 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0014) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-438-0	44,800 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0015) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-439-0	44,800 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0016) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-440-0	37,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0023) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-441-0	37,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0024) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-442-0	37,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0025) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING

Permit	Equipment Description
C-629-443-0	37,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0026) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-444-0	8,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0027) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-445-0	37,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0028) WITH PRESSURE/VACUUM VALVE, LOCATED IN CLIMATE-CONTROLLED BUILDING
C-629-446-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0069) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-447-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0070) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-448-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0071) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-449-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0072) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-450-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0073) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-451-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0074) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-452-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0075) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-453-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0076) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-454-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0077) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-455-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0078) WITH PRESSURE/VACUUM VALVE AND INSULATION

Permit	Equipment Description
C-629-456-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0079) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-457-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0080) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-458-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0081) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-459-0	87,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0082) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-460-0	65,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0233) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-461-0	65,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0234) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-462-0	65,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0235) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-463-0	65,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0236) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-464-0	65,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0237) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-465-0	65,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0238) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-466-0	65,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0239) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-467-0	65,500 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0240) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-468-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0700) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-469-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0701) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-470-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0702) WITH PRESSURE/VACUUM VALVE AND INSULATION

Permit	Equipment Description
C-629-471-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0703) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-472-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE TANK (TANK # R0704) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-473-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0705) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-474-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0706) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-475-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0707) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-476-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0708) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-477-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0709) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-478-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0710) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-479-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0711) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-480-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0712) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-481-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0713) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-482-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0714) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-483-0	33,000 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R0715) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-484-0	6,520 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R1100) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-485-0	6,520 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R1101) WITH PRESSURE/VACUUM VALVE AND INSULATION

Permit	Equipment Description
C-629-486-0	6,520 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R1102) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-487-0	6,520 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R1103) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-488-0	6,520 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R1104) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-489-0	6,520 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R1105) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-490-0	6,520 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R1106) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-491-0	6,520 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R1107) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-492-0	6,520 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R1108) WITH PRESSURE/VACUUM VALVE AND INSULATION
C-629-493-0	6,520 GALLON RED AND WHITE WINE FERMENTATION AND WINE STORAGE TANK (TANK # R1109) WITH PRESSURE/VACUUM VALVE AND INSULATION

Attachment B

Daily Wine Fermentation and Storage VOC Calculations

O'Neill Beverages Company
FID C-629, Project 1103740
Daily VOC Fermentation Calculations

Permit	Tank Capacity (gallons)	Emission Factor (lb-VOC/1,000 gallon)	Daily Fermentation Emissions (lb/day)
C-629-432-0	15,900	3.46	55.0
C-629-433-0	15,900	3.46	55.0
C-629-434-0	15,900	3.46	55.0
C-629-435-0	15,900	3.46	55.0
C-629-436-0	44,800	3.46	155.0
C-629-437-0	44,800	3.46	155.0
C-629-438-0	44,800	3.46	155.0
C-629-439-0	44,800	3.46	155.0
C-629-440-0	37,500	3.46	129.8
C-629-441-0	37,500	3.46	129.8
C-629-442-0	37,500	3.46	129.8
C-629-443-0	37,500	3.46	129.8
C-629-444-0	8,500	3.46	29.4
C-629-445-0	37,500	3.46	129.8
C-629-446-0	87,000	3.46	301.0
C-629-447-0	87,000	3.46	301.0
C-629-448-0	87,000	3.46	301.0
C-629-449-0	87,000	3.46	301.0
C-629-450-0	87,000	3.46	301.0
C-629-451-0	87,000	3.46	301.0
C-629-452-0	87,000	3.46	301.0
C-629-453-0	87,000	3.46	301.0
C-629-454-0	87,000	3.46	301.0
C-629-455-0	87,000	3.46	301.0
C-629-456-0	87,000	3.46	301.0
C-629-457-0	87,000	3.46	301.0
C-629-458-0	87,000	3.46	301.0
C-629-459-0	87,000	3.46	301.0
C-629-460-0	65,500	3.46	226.6
C-629-461-0	65,500	3.46	226.6
C-629-462-0	65,500	3.46	226.6
C-629-463-0	65,500	3.46	226.6
C-629-464-0	65,500	3.46	226.6
C-629-465-0	65,500	3.46	226.6
C-629-466-0	65,500	3.46	226.6
C-629-467-0	65,500	3.46	226.6
C-629-468-0	33,000	3.46	114.2
C-629-469-0	33,000	3.46	114.2

O'Neill Beverages Company
FID C-629, Project 1103740
Daily VOC Fermentation Calculations

Permit	Tank Capacity (gallons)	Emission Factor (lb-VOC/1,000 gallon)	Daily Fermentation Emissions (lb/day)
C-629-470-0	33,000	3.46	114.2
C-629-471-0	33,000	3.46	114.2
C-629-472-0	33,000	3.46	114.2
C-629-473-0	33,000	3.46	114.2
C-629-474-0	33,000	3.46	114.2
C-629-475-0	33,000	3.46	114.2
C-629-476-0	33,000	3.46	114.2
C-629-477-0	33,000	3.46	114.2
C-629-478-0	33,000	3.46	114.2
C-629-479-0	33,000	3.46	114.2
C-629-480-0	33,000	3.46	114.2
C-629-481-0	33,000	3.46	114.2
C-629-482-0	33,000	3.46	114.2
C-629-483-0	33,000	3.46	114.2
C-629-484-0	6,750	3.46	23.4
C-629-485-0	6,750	3.46	23.4
C-629-486-0	6,750	3.46	23.4
C-629-487-0	6,750	3.46	23.4
C-629-488-0	6,750	3.46	23.4
C-629-489-0	6,750	3.46	23.4
C-629-490-0	6,750	3.46	23.4
C-629-491-0	6,750	3.46	23.4
C-629-492-0	6,750	3.46	23.4
C-629-493-0	6,750	3.46	23.4

O'Neill Beverages Company
FID C-629, Project 1103740
Daily VOC Storage Calculations

Permit	Maximum Ethanol Content (%)	Emission Factor (lb-VOC/1,000 gallon)	Throughput (gallons/day)	Daily Storage Emissions (lb/day)
C-629-432-0	100.0	0.49	63,600	31.2
C-629-433-0	100.0	0.49	63,600	31.2
C-629-434-0	100.0	0.49	63,600	31.2
C-629-435-0	100.0	0.49	63,600	31.2
C-629-436-0	100.0	0.49	135,000	66.2
C-629-437-0	100.0	0.49	135,000	66.2
C-629-438-0	100.0	0.49	135,000	66.2
C-629-439-0	100.0	0.49	135,000	66.2
C-629-440-0	100.0	0.49	150,000	73.5
C-629-441-0	100.0	0.49	150,000	73.5
C-629-442-0	100.0	0.49	150,000	73.5
C-629-443-0	100.0	0.49	150,000	73.5
C-629-444-0	100.0	0.49	42,500	20.8
C-629-445-0	100.0	0.49	150,000	73.5
C-629-446-0	100.0	0.49	261,000	127.9
C-629-447-0	100.0	0.49	261,000	127.9
C-629-448-0	100.0	0.49	261,000	127.9
C-629-449-0	100.0	0.49	261,000	127.9
C-629-450-0	100.0	0.49	261,000	127.9
C-629-451-0	100.0	0.49	261,000	127.9
C-629-452-0	100.0	0.49	261,000	127.9
C-269-453-0	100.0	0.49	261,000	127.9
C-629-454-0	100.0	0.49	261,000	127.9
C-629-455-0	100.0	0.49	261,000	127.9
C-629-456-0	100.0	0.49	261,000	127.9
C-629-457-0	100.0	0.49	261,000	127.9
C-629-458-0	100.0	0.49	261,000	127.9
C-629-459-0	100.0	0.49	261,000	127.9
C-629-460-0	100.0	0.49	196,500	96.3
C-629-461-0	100.0	0.49	196,500	96.3
C-629-462-0	100.0	0.49	196,500	96.3
C-629-463-0	100.0	0.49	196,500	96.3
C-629-464-0	100.0	0.49	196,500	96.3
C-629-465-0	100.0	0.49	196,500	96.3
C-629-466-0	100.0	0.49	196,500	96.3
C-629-467-0	100.0	0.49	196,500	96.3
C-629-468-0	100.0	0.49	132,000	64.7
C-629-469-0	100.0	0.49	132,000	64.7

O'Neill Beverages Company
FID C-629, Project 1103740
Daily VOC Storage Calculations

Permit	Maximum Ethanol Content (%)	Emission Factor (lb-VOC/1,000 gallon)	Throughput (gallons/day)	Daily Storage Emissions (lb/day)
C-629-470-0	100.0	0.49	132,000	64.7
C-629-471-0	100.0	0.49	132,000	64.7
C-629-472-0	100.0	0.49	132,000	64.7
C-629-473-0	100.0	0.49	132,000	64.7
C-629-474-0	100.0	0.49	132,000	64.7
C-629-475-0	100.0	0.49	132,000	64.7
C-629-476-0	100.0	0.49	132,000	64.7
C-629-477-0	100.0	0.49	132,000	64.7
C-629-478-0	100.0	0.49	132,000	64.7
C-629-479-0	100.0	0.49	132,000	64.7
C-629-480-0	100.0	0.49	132,000	64.7
C-629-481-0	100.0	0.49	132,000	64.7
C-629-482-0	100.0	0.49	132,000	64.7
C-629-483-0	100.0	0.49	132,000	64.7
C-629-484-0	100.0	0.49	33,750	16.5
C-629-485-0	100.0	0.49	33,750	16.5
C-629-486-0	100.0	0.49	33,750	16.5
C-629-487-0	100.0	0.49	33,750	16.5
C-629-488-0	100.0	0.49	33,750	16.5
C-629-489-0	100.0	0.49	33,750	16.5
C-629-490-0	100.0	0.49	33,750	16.5
C-629-491-0	100.0	0.49	33,750	16.5
C-629-492-0	100.0	0.49	33,750	16.5
C-629-493-0	100.0	0.49	33,750	16.5

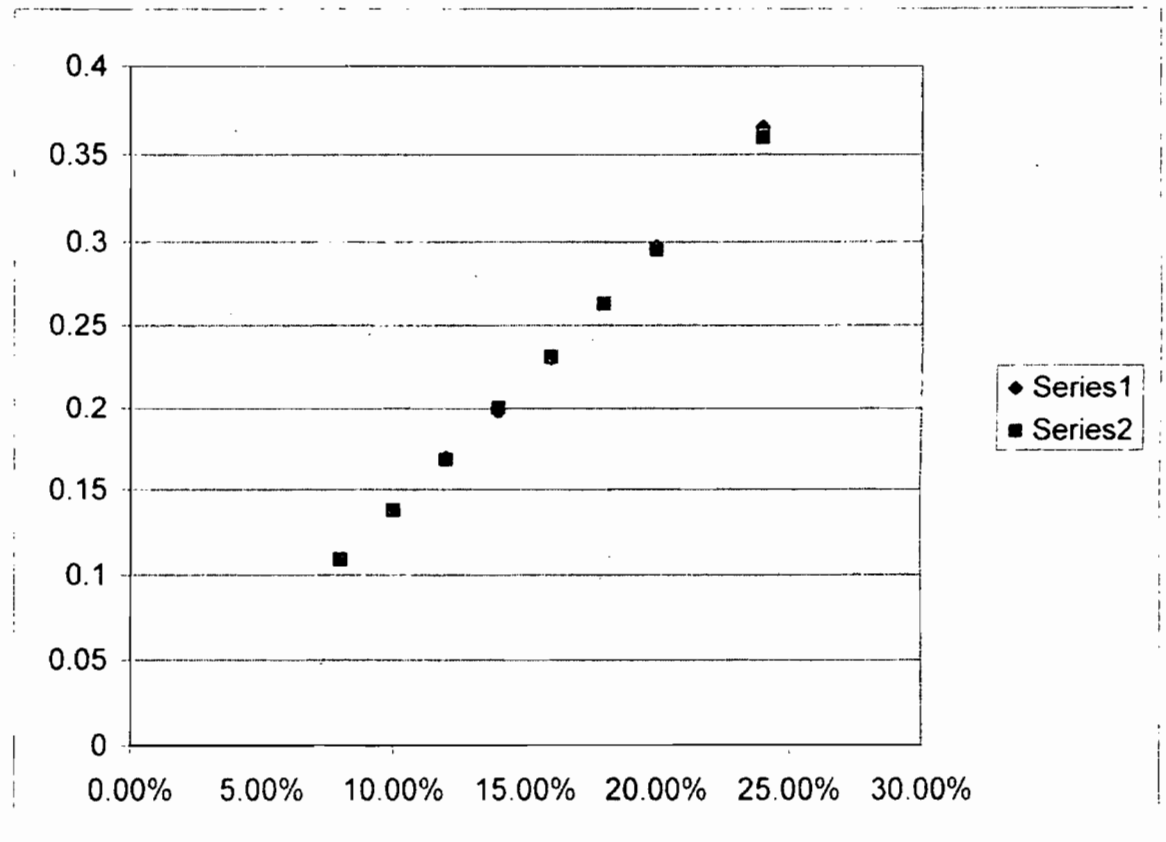
Attachment C

Annual VOC Emission Factor Curve Fit Equation Determination

Curvefit for Annual Working Loss Emission Factor from FYI-114

Ef (actual per FYI- 114)	% Ethanol	Ef (calc by correlation)
0.109	8.00%	0.109
0.138	10.00%	0.138
0.17	12.00%	0.169
0.198	14.00%	0.2
0.23	16.00%	0.231
0.263	18.00%	0.263
0.297	20.00%	0.295
0.365	24.00%	0.36

ln Ef	ln %
-2.2164074	-2.5257286
-1.9805016	-2.3025851
-1.7719568	-2.1202635
-1.6194882	-1.9661129
-1.469676	-1.8325815
-1.3356012	-1.7147984
-1.2140231	-1.6094379
1.0904072	0.533717
	1.705259



Series 1 = FYI-114
Series 2 = correlation

$$Ef = A * (\% \text{ ethanol})^B$$

A = 1.705259
B = 1.090407

Attachment D

BACT Guideline 5.4.14 Top Down VOC BACT Analysis for Wine Fermentation Tanks

Top Down BACT Analysis for VOC Emissions:

Step 1 - Identify All Possible Control Technologies

SJVUAPCD BACT Clearinghouse guideline 5.4.14, 1st quarter 2011, identifies achieved in practice BACT for wine storage tanks as follows:

- 1) Temperature-Controlled Open Top Tank with Maximum Average Fermentation Temperature of 95°F

SJVUAPCD BACT Clearinghouse guideline 5.4.14, 1st quarter 2011, identifies technologically feasible BACT for wine storage tanks as follows:

- 1) Capture of VOCs and thermal or catalytic oxidation or equivalent (88% control)
- 2) Capture of VOCs and carbon adsorption or equivalent (86% control)
- 3) Capture of VOCs and absorption or equivalent (81% control)
- 4) Capture of VOCs and condensation or equivalent (81% control)

SJVUAPCD BACT Clearinghouse guideline 5.4.14, 1st quarter 2011, does not identify any alternate basic equipment control alternatives.

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Rank	Control	Overall Capture & Control Efficiency ¹
1	Capture of VOCs and thermal or catalytic oxidation	88 %
2	Capture of VOCs and carbon adsorption	86 %
3	Capture of VOCs and absorption	81 %
4	Capture of VOCs and condensation	81 %
5	Temperature-Controlled Open Top Tank with Maximum Average Fermentation Temperature of 95°F	Baseline (Achieved in Practice)

Step 4 - Cost Effectiveness Analysis

General Approach for Cost Effectiveness

Due to differences in processing temperature, red wine has an emissions factor of 6.2-lb VOC/1,000 gallons whereas white wine has an emissions factor of 2.5-lb/1000 gallons of fermented wine per District Rule 4694, *Wine Fermentation and Storage Tanks*. In addition, red wine fermentation batches are completed in 3 to 5 days versus 10 to 14 days for white wine fermentation. Therefore, a red wine fermentation tank of a given size will potentially operate at

¹ Capture efficiency (90%) x removal efficiency for control device.

significantly higher throughput and produce significantly higher emissions per unit of throughput relative to a white wine fermentation tank of the same size. As a result of these differences in emission rates, the cost effectiveness for controlling emissions from red wine will be fundamentally better than that for white wine and thus the cost effectiveness analysis will be first performed for red wine only. In the event a technology is shown to be cost effective for red wine, that particular technology will be analyzed for white wine fermentation as well.

The following emission control technologies have been determined to be technologically feasible for control of VOC emissions from wine fermentation tanks:

- Thermal Oxidation (88% control)
- Carbon Adsorption (86% control)
- Refrigerated Condenser (81% control)
- Wet Scrubber (81% control)

Recognizing that "thermal oxidation" includes both recuperative and regenerative thermal oxidizers the cost effectiveness of the following cases will be examined for the determination of BACT for wine fermentation:

- | | |
|--------|---|
| Case 1 | Thermal oxidation with 0% heat recovery (low capital/high operating cost) |
| Case 2 | Regenerative thermal oxidation with 95% heat recovery (high capital/low operating cost) |
| Case 3 | Refrigerated Condensers |
| Case 4 | Water scrubber |
| Case 5 | Carbon adsorption |

A cost-effectiveness analysis is not required for temperature-controlled fermentation since this option is Achieved-in-Practice. To establish a comparative physical scope of each of the above cases, the District will take an industry-wide approach based on applying the five different control technology cases to red wine fermentation tanks located at the E & J Gallo Winery at Livingston, California (Facility N-1237), rather than the O'Neill facility. The rationale for this is based on the following:

- The Gallo facility at Livingston is sufficiently representative of typical red wine fermentation facilities located at major source wineries to allow it to serve as a general model for the physical scope requirements of such facilities including the O'Neill facility.
- The Gallo facility is currently the largest winery in the world and the average fermentation tank size is larger than that of the O'Neill facility. Any control technology found to not be cost effective for the Gallo facility can be assumed to be not cost effective to smaller facilities such as O'Neill as well due to economies of scale. If any technology is determined to be cost effective at Gallo, it will then be analyzed for the O'Neill facility as well to confirm cost effectiveness for the smaller operation.

- The Gallo facility was used as a basis for engineering and cost effectiveness studies in development of District Rule 4694 and substantial scope and cost information is available for this facility pertaining to the scope of control system requirements and that of the ancillary systems required to support the basic emission control units (such as ductwork and supports and the CIP systems for the ductwork). The Eichleay study details the potential application of VOC controls to this facility and addresses many of the technical issues and the general site specific factors for wineries. This study developed two separate estimates, one for the fermentation control system installation ("Base Estimate") and a second "Utilities Estimate" to cover the clean-in-place system, the expansion of the plant electric utility and the instrument air system. District staff has reviewed the estimating methodology employed in the Eichleay estimates and found that the estimating approach is fundamentally sound and follows accepted practice in the engineering and construction industry, applying reasonable unit rates and costs for materials and labor for development of direct costs. This information is available to use as a basis for this cost effectiveness analysis. The Eichleay Base and Utilities Estimates are attached as BACT Attachment 2.

Estimating Basis

Estimates of Total Capital Investment (TCI), annual costs, potential emission reductions, and the resulting cost effectiveness have been prepared for each of the control technology cases above utilizing selected portions of the Direct Costs developed by the Eichleay study. The general approach and basis of the estimates is as follows:

1. Except for specific substitutions or modifications as listed below, EPA's cost template for VOC incineration systems, as presented in the EPA Control Cost Manual, Section 3.2, Tables 2.8 and 2.9, was used. Typical site specific factors and other required direct costs not covered by the template have been extracted from the Eichleay study and inserted in the template to cover all the scope elements required for installation of controls on fermentation tanks. To ensure that all estimate cases are comparative, the EPA cost template (with EPA cost factors) was used to develop the direct cost of installing the purchased control device for all estimate cases. The control device is taken to include the upstream separator vessel which is used to separate any entrained liquids from the fermentation tank vent stream before it enters the control device.
2. All estimates are based on the general facilities design prepared by Eichleay for the Gallo winery at Livingston, CA. Using this basis, the impact of substituting different control technologies will be examined. It is assumed that the basic scope of ductwork and supports, tank modifications, ancillary systems and site specific costs will be common to all technologies.
3. The Gallo facility consists of 60 red wine fermentation tanks with a combined nominal capacity of 6,850,000 gallons. In the general facilities design as prepared by Eichleay the tanks are grouped into four separate groups of tanks, each group separately manifolded together and ducted to a separate dedicated control device (See Eichleay drawing SK-30892-001 in BACT Attachment E). The tank groupings are designated as:

- VOC-1 Seventeen (17) 100,000 gallon tanks
VOC-2 Twelve (12) 200,000 gallon tanks
VOC-3 Ten (10) 100,000 gallon tanks and seven (7) 50,000 gallon tanks
VOC-4 Fourteen (14) 100,000 gallon tanks

4. Control device capacity (per the Eichleay study) is based on a peak vapor rate of 9.75 scfm/1000 gallons of wine fermenting at an 85 °F fermentation temperature. Since the Eichleay study was based solely on using a thermal incinerator as the control device, an additional 23.6 % flow capacity is included in the control device capacity to account for the combustion air which must be added since the vent stream from the tank contains only CO₂, water and ethanol. Other non-combustion control technologies do not require additional air and may thus be rated at a lower flow capacity. On this basis, the four control devices have been determined to require the following capacities:

5.

Red Fermentation Capture and Control Systems Proposed for Gallo-Livingston Per Eichleay Engineering Study					
VOC Device Number	No. of Tanks	Fermentation Tank Capacity (gallons)	Total Capacity of Red Fermentation Tanks (gallons)	Combustion Control Device Flow Capacity per the Eichleay Study (SCFM)	Non-Combustion Control Device Flow Capacity (SCFM)
VOC-1	17	100,000	1,700,000	16,000	12,900
VOC-2	12	200,000	2,400,000	22,000	17,800
VOC-3	10	100,000	1,350,000	13,000	10,500
	7	50,000			
VOC-4	14	100,000	1,400,000	13,000	10,500
Total	60		6,850,000	64,000	51,700

6. Capacities and costs for control devices for each case were developed based on the capacities of the four VOC systems listed above. Sources for pricing of control devices were as follows:

Recuperative Thermal Oxidizers: EPA Cost Control Manual, Section 3.2, Chapter 2, Equation 2.29

Regenerative Thermal Oxidizers: Vendor quotations obtained by Eichleay Engineering

Carbon Adsorption System: Technical Assessment Document, p.17

BACT Attachment C presents the developed capacities and estimated purchase prices for the control devices for each estimate case...

7. Purchased equipment costs for the knock out vessels (common to all estimate cases) have been extracted from the main Eichleay estimate. A purchased material cost of \$148,000 for the knock out vessels was taken from page 15 of Eichleay's main estimate. Sizing criteria is presented in the Eichleay study and the pricing was developed based on Eichleay's in-house estimating data for this type of equipment derived from purchasing experience on previous projects.
8. Direct costs taken from the Eichleay study will be used for estimation of site specific and other costs not covered by the equipment factors in the EPA VOC incineration cost template. These costs include site preparation, ductwork, structural steel pipeway and associated foundations for ductwork support, clean-in-place (CIP) system, expansion of the plant electric utility, modification of fermentation tanks for duct connections, and the instrumentation system for control of tank foam over.
9. Site preparation costs to develop a plot area for the VOC control equipment have been extracted from page 4 of the main Eichleay estimate which the District considers to be typical of the requirements which would be encountered at most existing major wineries. Most wineries are constructed with the tanks located in tight groups with minimal spacing between the tanks, requiring that control devices be installed on the perimeter of the winery, typically undeveloped agricultural land. Extracted costs from the Eichleay include subcontract pricing for demolition of an existing road, installation and compaction of fill, and new pavement to develop a plot space sufficient to install four new control devices with upstream separators and associated piping and ducting. These costs total \$1,254,000 and are based on budgetary subcontract pricing obtained by Eichleay.
10. The total direct cost for ductwork was extracted from the Eichleay study. A material cost of \$1,104,800 and an installation labor cost of \$940,500 for the ductwork has been extracted from pages 16 through 23 of the main Eichleay estimate. California sales tax of 8% and freight charges of 3% were added to the materials cost to arrive at a direct cost of \$2,167,000 for the ductwork. Estimated ductwork quantities are based on Eichleay plan drawing SK-30913-001 and the process flow diagram presented in Eichleay drawing SK-30892-003 (see BACT Attachment E). Unit costs for fabricated stainless steel ductwork were based on a budgetary quotation obtained by Eichleay from Viron International, a ductwork spool fabricator.

² Sonoma Technology, Inc., Control Technology Evaluation: Wineries – Fermentation Processes, Control Measures Assessment STI-903340-2429a-CMA, October 21, 2003.

11. A material cost of \$1,779,600 and an installation labor cost of \$752,000 for structural steel to support the new ductwork system and associated piping has been extracted from the totals presented on page 8 of the Eichleay base estimate. California sales tax of 8% and freight charges of 3% were added to the materials cost to arrive at a direct cost of \$2,727,000 for the structural steel. Steel design and quantities in this estimate are based on Eichleay plan drawing SK-30913-001 and the steel structure sections presented in Eichleay drawing SK-S12 (see BACT Attachment E). Fabricated steel pricing was based on a quotation obtained by Eichleay from a structural steel fabricator in Bakersfield, CA.
12. Costs for heavy lift equipment including heavy cranes and use of a helicopter operation to set steel structures and ductwork was taken from page 24 of the main Eichleay estimate. Pricing was obtained by Eichleay from a helicopter firm based out of the Fresno Airport.
13. The Eichleay utility estimate developed a total direct cost of \$5,859,000 for both the CIP system and the expansion of the plant electric utility. Eichleay drawing SK-30892-004 provides a piping and instrumentation diagram for the CIP chemicals storage and supply system. Drawing SK-30892-006 illustrates the CIP spray header installation in the ductwork. Expansion of the electric utility included new 12 kV switchgear and 1500 kVA transformer to supply power from the existing switchyard to the project (see Eichleay drawings 30892-SK-E01 and E02). A direct allocated cost of \$314,000 for the electric utility expansion was extracted from page 8 of the utilities estimate. Total Direct Cost for this item is taken as 391,000 after pro-rating the Contractor's Fee and other unallocated construction expense from the estimate. The balance of the Total Direct Cost (labeled "Field Cost" in the estimate summary sheet) is the direct cost of \$5,468,000 for the CIP system (this figure includes a small amount for expansion of the plant instrument air system also).
14. The direct costs (materials, labor, and subcontracts) to modify the fermentation tanks for installation of new nozzles required for connection of ductwork includes costs for build and teardown of scaffolding in each tank, demolition of existing insulation, machine cutting of each tank, fabrication and installation of new nozzles, and post-weld passivation of the tank. These costs are taken from pages 15 and 16 of the main estimate and total \$487,000.
15. The direct cost for an instrumentation system for control of tank foam over was taken from page 13 of the main Eichleay estimate. The materials cost of \$514,800 for capacitance probes, actuated butterfly valves and switches to be installed on each tank was adjusted to include California sales tax and a 3% freight cost. Installation labor of \$57,600 from page 13 was added to yield a total direct cost for this item of \$629,000. Design basis for the system is presented in Eichleay drawing SK-30892-007 (see BACT Attachment E). Unit material costs are based on budgetary vendor's pricing obtained by Eichleay. Unit labor factors and costs are based on Eichleay's in-house estimating data.

16. The EPA model cost factor for foundations and supports is 8% of purchased equipment cost which in this case is applicable to only the control device and the knock out vessel. It thus does not factor in the costs of foundations for the substantial steel structures required for this project. Therefore, this cost was extracted from the Eichleay study and added as a direct cost in the estimate. Foundation design for the pipeway consists of drilled concrete piers for support of pipeway structures which require a minimal footprint relative to conventional footers and for this reason are the standard approach for support under new steel columns when they are being installed in congested areas in existing industrial facilities. Direct costs (material + labor + subcontract) for concrete pier foundations have been extracted from page 5 of the estimate (\$247,000) which covers drilling, rebar fabrication and setting, forming, pouring and finishing of the drilled piers. Estimated quantities are based on Eichleay plan drawing SK-30913-001 and the steel structure sections presented in Eichleay drawing SK-S12. The unit costs were based on Eichleay's historical experience with subcontract pricing for these items.
17. Construction Expense and Contractor's Fee have been included in the direct costs at 8% and 10 percent of all other direct costs respectively. These percentages reflect those used in the Eichleay study and are typical based on District Staff's experience. For comparison, Peters & Timmerhaus³ recommend 10% and 7% for the items respectively.
18. Annual natural gas usage of 67,412 therms was estimated for the Gallo Livingston design by Eichleay (Appendix G of the Eichleay study) based on a 12 week season and 95% thermally efficient RTO's operating 50% of the time with an ethanol concentration of 6,034 ppm for 50% of the time and in hot standby the other 50% with allowance for startups. This natural gas usage will be used as the basis for the cost effectiveness calculations, factored as required for the thermal efficiency basis of the proposed control unit.
19. Long term natural gas price is assumed to be \$8.00 per MMBtu
20. Power consumption for the Gallo facility is estimated by Eichleay at 586 kW (Appendix G of the Eichleay study). Since essentially all this power is consumed by the induced draft fans at the VOC control unit, this power basis will be assumed to be the same for the induced draft fans associated with all control technologies, factored down as required for control units not requiring combustion air.
21. Power consumption will be based on a 120 day crush season and a power cost of \$0.11/kWh.
22. BACT Attachment D presents a tabulation of the utilities and other annual costs for each estimate case as well as the details of the basis and calculations.
23. Escalation has been applied at a rate of 3% per year where applicable.

³ Peters, Max and Klaus Timmerhaus, Plant Design and Economics for Chemical Engineers, McGraw-Hill, New York, 1968, p. 115.

24. Engineering cost and construction management costs have been included at 15% and 3% of the Total Direct Cost based on the percentages applied in the Eichleay Study. These percentages reflect those used in the Eichleay study and are typical based on District Staff's experience. A value of 15% for engineering is generally less than that recommended by Peters & Timmerhaus⁴ who indicate engineering costs typically are in the range of 4-21% of Total Capital Investment with a median value of 13%.
25. Calculated VOC emission reductions will be debited for collateral NOx and VOC production from firing of natural gas where applicable based on 1 lb NOx = 1 lb VOC. For natural gas, emissions are based on 0.1 lb-NOx/MMBtu and 0.0055 lb-VOC/MMBtu per AP-42. Calculated emissions from natural gas firing are presented in the following table:

Natural Gas Combustion Emissions					
Item	Case 1 Thermal Ox	Case 2 RTO	Case 3 Refrigerated Condenser	Case 4 Water Scrubber	Case 5 Carbon Adsorption
Natural Gas Combustion MMBtu/year	134,820	6,741	0	0	0
Annual NOx Emissions From Natural Gas tons-NOx/year	6.7	0.34	0	0	0
Annual VOC Emissions From Natural Gas tons-VOC/year	0.4	0.02	0	0	0
Total NOx + VOC from Natural Gas tons per year	7.1	0.4	0	0	0

26. Contingency has been included at 10% of the sum of Total Direct Cost and Total Indirect Cost. This value is given as typically 8-20% with an average of 10% by Peters and Timmerhaus⁵
27. Operating labor requirement was estimated one full time operator for all four VOC control systems with 3 shifts per day for the duration of the 120 day crush operation.
28. Maintenance labor requirement was estimated at 80 hours per week for all four control systems during a total of 20 weeks per year.

⁴ Peters, Max and Klaus Timmerhaus, Plant Design and Economics for Chemical Engineers, McGraw-Hill, New York, 1968, p. 115.

⁵ Peters, Max and Klaus D. Timmerhaus, Plant Design and Economics for Chemical Engineers, McGraw-Hill, New York, 1968, p.116.

29. Operating and maintenance labor cost was included at \$19.50/hour and \$33.00 for year 2005 respectively per the Eichleay study and escalated at 4% to 2009.
30. Maintenance materials have been estimated at 3% of TCI. (Peters and Timmerhaus give a typical value of 6% for general process industries).
31. Total Capital Investment has been annualized based on a 10 year equipment life and a 10% opportunity cost for capital (CRF = 0.163).
32. Calculation of potential emissions from fermentation is based upon the red wine emission factor of 6.2 lb-ethanol per 1000 gallons of red wine and upon the maximum potential wine production capacity for the fermentation tanks. Maximum annual throughput capacity is calculated as follows:

Red crush season duration of 120 days

Five day batch processing period for red wine fermentation; maximum number of batches per season = $120 \text{ days/season} \div 5 \text{ days/batch} = 24 \text{ batches per season}$

Total red wine fermenter volume in this estimate = 6,850,000 gallons

Maximum fill for red wine fermenter (due to foaming/expansion) = 80%

Maximum wine production capacity = working capacity of fermenters x # batches per season = $6,850,000 \times 80\% \times 24 = 131,520,000 \text{ gallons per year}$

VOC Emissions = $131,520,000 \text{ gallons/year} \times 6.2 \text{ lb-VOC/1000 gallons}$

$= 815,400 \text{ lb-VOC/year} = \mathbf{407.7 \text{ tons-VOC/year}}$

Cost Effectiveness Estimates

Table 1 presents the development of Total Capital Investment (TCI) for all capture and control cases based on the general facilities design prepared by Eichleay (including site specific costs and CIP) and Table 2 presents the associated annual costs, emission reductions, and cost effectiveness for each capture and control case.

Table 1
Total Capital Investment for VOC Control of Red Wine Fermentation

	Case 1 Thermal Ox	Case 2 RTO	Case 3 Refrigerated Condenser	Case 4 Water Scrub	Case 5 Carbon Adsorption
Direct Costs					
Purchased Equipment Costs					
Control Device	\$745,000	\$1,854,000	\$3,003,000	\$396,000	\$1,667,000
Knock Out Vessels	\$148,000	\$148,000	\$148,000	\$148,000	\$148,000
Subtotal Equipment (A)	\$893,000	\$2,002,000	\$3,151,000	\$544,000	\$1,815,000
Instrumentation (0.10 x A)	\$89,000	\$200,000	\$315,000	\$54,000	\$182,000
Sales Tax (0.08 x A)	\$71,000	\$160,000	\$252,000	\$44,000	\$145,000
Freight (0.05 x A)	<u>\$45,000</u>	<u>\$100,000</u>	<u>\$158,000</u>	<u>\$27,000</u>	<u>\$91,000</u>
Purchased Equipment Cost (PEC)	\$1,098,000	\$2,462,000	\$3,876,000	\$669,000	\$2,233,000
<u>Direct Installation Costs for Purchased Equipment</u>					
Foundations and Supports	\$88,000	\$197,000	\$310,000	\$54,000	\$179,000
Handling & Erection	\$154,000	\$345,000	\$543,000	\$94,000	\$313,000
Electrical	\$44,000	\$98,000	\$155,000	\$27,000	\$89,000
Piping	\$22,000	\$49,000	\$78,000	\$13,000	\$45,000
<u>Direct Costs Not Included Above</u>					
Structural Steel Pipeway	\$2,727,000	\$2,727,000	\$2,727,000	\$2,727,000	\$2,727,000
Ductwork	\$2,167,000	\$2,167,000	\$2,167,000	\$971,000	\$971,000
Pipeway Foundations	\$247,000	\$247,000	\$247,000	\$247,000	\$247,000
Site Prep	\$1,254,000	\$1,254,000	\$1,254,000	\$1,254,000	\$1,254,000
CIP System	\$5,468,000	\$5,468,000	\$5,468,000	\$5,468,000	\$5,468,000
Electrical Utility	\$391,000	\$391,000	\$391,000	\$391,000	\$391,000
Tank Modifications	\$487,000	\$487,000	\$487,000	\$487,000	\$487,000
Foam Over Control System	\$629,000	\$629,000	\$629,000	\$629,000	\$629,000
Heavy Lift Equipment	<u>\$1,192,000</u>	<u>\$1,192,000</u>	<u>\$1,192,000</u>	<u>\$1,192,000</u>	<u>\$1,192,000</u>
Subtotal	\$15,968,000	\$17,713,000	\$19,524,000	\$14,223,000	\$16,225,000
Construction Expense	\$1,277,000	\$1,417,040	\$1,561,920	\$1,137,840	\$1,298,000
Contractor's Fee	<u>\$1,597,000</u>	<u>\$1,771,300</u>	<u>\$1,952,400</u>	<u>\$1,422,300</u>	<u>\$1,622,500</u>
Total Direct Costs	\$18,842,000	\$20,901,340	\$23,038,320	\$16,783,140	\$19,145,500
<u>Indirect Costs</u>					
Engineering	\$2,826,000	\$3,135,000	\$3,456,000	\$2,517,000	\$2,872,000
Construction Management Expense	\$565,000	\$627,000	\$691,000	\$503,000	\$574,000
Start Up	\$22,000	\$49,000	\$78,000	\$13,000	\$45,000
Performance Test	\$11,000	\$25,000	\$39,000	\$7,000	\$22,000
Contingencies	<u>\$2,227,000</u>	<u>\$2,474,000</u>	<u>\$2,730,000</u>	<u>\$1,982,000</u>	<u>\$2,266,000</u>
Total Indirect Costs	\$5,651,000	\$6,310,000	\$6,994,000	\$5,022,000	\$5,779,000
Total Capital Investment	\$21,619,000	\$24,023,000	\$26,518,000	\$19,245,000	\$22,004,000

Table 2
Annual Costs for VOC Control of Red Wine Fermentation

Control Device	Case 1 Thermal Ox	Case 2 RTO	Case 3 Refrigerated Cond.	Case 4 Water Scrubber	Case 5 Carbon Adsorption
Total Capital Investment	\$21,619,000	\$24,023,000	\$26,518,000	\$19,245,000	\$22,004,000
Direct Annual Costs					
Labor & Materials					
Operating Labor (.5 hr/shift-unit @ \$22.81/hour)	\$65,700	\$65,700	\$65,700	\$65,700	\$65,700
Supervisor (15% of operator cost)	\$9,900	\$9,900	\$9,900	\$9,900	\$9,900
Operating Materials (15% of total maintenance cost)	\$104,700	\$112,500	\$123,700	\$91,000	\$103,400
Maintenance Labor (0.5 hr/shift-unit@ \$38.60/hour)	\$49,400	\$29,200	\$29,200	\$29,200	\$29,200
Maintenance Materials (3% of TCI)	\$648,600	\$720,700	\$795,500	\$577,400	\$660,100
Utilities	\$1,263,600	\$239,500	\$399,600	\$2,194,400	\$407,200
Total Direct Annual Cost	\$2,141,900	\$1,177,500	\$1,423,600	\$2,967,600	\$1,275,500
Indirect Annual Costs					
Overhead (60% of labor & Mat'ls)	\$527,000	\$562,800	\$614,400	\$463,900	\$521,000
Administrative Charges (2% of TCI)	\$432,400	\$480,500	\$530,400	\$384,900	\$440,100
Property Taxes (2% TCI)	\$432,400	\$480,500	\$530,400	\$384,900	\$440,100
Insurance (1% TCI)	\$216,200	\$240,200	\$265,200	\$192,500	\$220,000
Capital Recovery (CRF = 0.163)	<u>\$3,523,900</u>	<u>\$3,915,700</u>	<u>\$4,322,400</u>	<u>\$3,136,900</u>	<u>\$3,586,700</u>
Total Indirect Annual Cost	\$5,131,900	\$5,679,700	\$6,262,800	\$4,563,100	\$5,207,900
Total Annualized Cost	\$7,273,800	\$6,857,200	\$7,686,400	\$7,530,700	\$6,483,400
Emission Reductions					
Uncontrolled Emissions tpy	407.70	407.70	407.70	407.70	407.70
Collection & Control Efficiency	88%	88%	81%	81%	86%
Annual Emission Reduction tpy	358.78	358.78	330.24	330.24	350.62
Natural Gas Emissions tpy	7.11	0.36	0.00	0.00	0.00
Net Emission Reduction tpy	351.67	358.42	330.24	330.24	350.62
Cost Effectiveness \$/ton	\$20,700	\$19,100	\$23,300	\$22,800	\$18,500

Step 5 – Select BACT

As estimated in Tables 1 and 2, the cost effectiveness of all technologies evaluated lie between \$18,500 and \$23,300 per ton. As discussed previously, since the evaluation basis for this determination was the control of emissions from large red wine fermenters it may be inferred that the calculated values are significantly lower than that which would be evaluated for white wine fermenters due to the lower emission factor and lower potential wine production rate for white wine fermentation tanks. In addition, since this study evaluated emission controls on what is currently the largest red wine fermentation plant in the world, the results are applicable to fermentation tanks of all sizes due to 1) wineries with smaller tanks will be less cost effective due to increasing redundancy and/or loss of economies of scale and 2) proposed new wineries with a capacity equal to or exceeding Gallo-Livingston would be less cost effective since, due to market considerations which are currently driving the industry toward smaller fermentation batches of more premium wine, a new fermentation facility would most likely be configured with a larger number of smaller tanks and a corresponding greater number of VOC control systems per gallon of capacity. Therefore, the evaluated cost effectiveness values above represent the low end of the range of cost effectiveness and any direct evaluation of the O'Neill facility is expected to yield a value which is significantly higher than those above.

The lowest evaluated cost effectiveness of \$18,500 per ton exceeds the District's cost effectiveness threshold of \$17,500 per ton for VOC. Therefore, since all Technologically Feasible BACT options have been demonstrated to not be cost effective, the fermentation tanks for O'Neill Beverages will be permitted for operation with Achieved-in-Practice BACT (operation with open top tank and a maximum average fermentation temperature of 95 °F).

Attachments:

- BACT 5.4.14 Attachment 1: Eichleay Estimates for Fermentation Controls at Gallo Livingston
- BACT 5.4.14 Attachment 2: Sizing and Purchase Costs for Control Devices
- BACT 5.4.14 Attachment 3: Utilities and other Annual Costs
- BACT 5.4.14 Attachment 4: Eichleay Drawings

BACT 5.4.14 Attachment 1

Eichleay Estimates for Fermentation Controls at Gallo Livingston



Eichleay Engineers Inc. of California

ESTIMATE SUMMARY SHEET

Client Name: Wine Institute

Estimated By: P.H.M.

Job Number: 30913

PRELIMINARY ESTIMATE

Checked By: R.H.

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	TOTAL COSTS				GRAND
		RTO-1	RTO-2	RTO-3	RTO-4	TOTAL
	SUMMARY					
2.00	Site Construction	\$1,253,680	\$5,450	\$5,450	\$5,450	\$1,270,030
3.00	Concrete	\$208,450	\$81,500	\$85,500	\$69,500	\$444,950
4.00	Masonry					\$0
5.00	Metals	\$1,499,010	\$395,028	\$361,670	\$275,846	\$2,531,554
6.00	Wood & Plastics					\$0
7.00	Thermal & Moisture Protection					\$0
8.00	Door & Windows					\$0
9.00	Finishes					\$0
10.00	Specialties	\$8,620	\$0	\$0	\$0	\$8,620
11.00	Equipment					\$0
12.00	Furnishings					\$0
13.00	Special Construction					\$0
14.00	Conveying Systems					\$0
15.00	Mechanical HVAC & Plumbing					\$0
16.00	Electrical	\$116,439	\$28,212	\$27,326	\$32,226	\$204,203
17.00	Instruments & Controls	\$340,195	\$199,195	\$199,195	\$199,195	\$937,780
18.00	Process Piping & Equipment	\$1,553,959	\$1,572,913	\$1,438,695	\$1,361,843	\$5,927,410
	Sub Total	\$4,980,353	\$2,282,298	\$2,117,836	\$1,944,060	\$11,324,547
	Tax & Freight	282,779	125,680	113,112	106,828	\$628,398
	General Conditions	\$421,051	\$192,638	\$178,476	\$164,071	\$956,236
	General Contractor Mark-Up	\$478,373	\$220,042	\$204,924	\$187,478	\$1,090,818
	Field Costs - Sub Total	\$6,162,556	\$2,820,657	\$2,614,348	\$2,402,438	\$13,999,999
	Design Fee Allowance	924,383	423,099	392,152	360,366	\$2,100,000
	Construction Management Allowance	\$184,877	\$84,620	\$78,430	\$72,073	\$420,000
	Plan Check & Permit Fee Allowance	\$21,843	\$9,708	\$8,737	\$8,252	\$48,539
	Third Party Inspection Allowance	\$16,382	\$7,281	\$6,553	\$6,189	\$36,404
	Escalation	\$281,415	\$131,806	\$125,029	\$119,047	\$657,297
	Project Contingency	\$2,070,463	\$920,206	\$828,185	\$782,175	\$4,601,028
	Sub Total	\$9,661,919	\$4,397,375	\$4,053,435	\$3,750,538	\$21,863,267
	Owners Costs	\$92,438	\$42,310	\$39,215	\$36,037	\$210,000
	Round Off	-\$357	\$315	\$350	\$425	\$733
	GRAND TOTAL	\$9,754,000	\$4,440,000	\$4,093,000	\$3,787,000	\$22,074,000

Prepared By:

Date:

P.H.M.
6/24/05

Approved By:

Date:

R.V. Medgar
6/24/05



Eichleay Engineers Inc. of California

ESTIMATE SUMMARY SHEET

Client Name: Wine Institute

Estimated By: P.H.M.

Job Number: 30913

PRELIMINARY ESTIMATE

Checked By: R.H.

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

Rev. 2 Date: 6/24/05

W/O ESCALATION & OWNERS COSTS						
CODE	ITEM DESCRIPTION	TOTAL COSTS				GRAND
		RTO-1	RTO-2	RTO-3	RTO-4	TOTAL
	SUMMARY					
2.00	Site Construction	\$1,253,680	\$5,450	\$5,450	\$5,450	\$1,270,030
3.00	Concrete	\$208,450	\$81,500	\$85,500	\$69,500	\$444,950
4.00	Masonry					\$0
5.00	Metals	\$1,499,010	\$395,028	\$361,670	\$275,846	\$2,531,554
6.00	Wood & Plastics					\$0
7.00	Thermal & Moisture Protection					\$0
8.00	Door & Windows					\$0
9.00	Finishes					\$0
10.00	Specialties	\$8,620	\$0	\$0	\$0	\$8,620
11.00	Equipment					\$0
12.00	Furnishings					\$0
13.00	Special Construction					\$0
14.00	Conveying Systems					\$0
15.00	Mechanical HVAC & Plumbing					\$0
16.00	Electrical	\$116,439	\$28,212	\$27,326	\$32,226	\$204,203
17.00	Instruments & Controls	\$340,195	\$199,195	\$199,195	\$199,195	\$937,780
18.00	Process Piping & Equipment	\$1,553,959	\$1,572,913	\$1,438,695	\$1,361,843	\$5,927,410
	Sub Total	\$4,980,353	\$2,282,298	\$2,117,836	\$1,944,080	\$11,324,547
	Tax & Freight	282,779	125,680	113,112	106,828	\$628,398
	General Conditions	\$421,051	\$192,638	\$178,476	\$164,071	\$956,236
	General Contractor Mark-Up	\$478,373	\$220,042	\$204,924	\$187,479	\$1,090,818
	Field Costs - Sub Total	\$6,162,556	\$2,820,657	\$2,614,348	\$2,402,438	\$13,999,999
	Design Fee Allowance	924,383	423,099	392,152	360,366	\$2,100,000
	Construction Management Allowance	\$184,877	\$84,620	\$78,430	\$72,073	\$420,000
	Plan Check & Permit Fee Allowance	\$21,843	\$9,708	\$8,737	\$8,252	\$48,539
	Third Party Inspection Allowance	\$16,382	\$7,281	\$6,553	\$6,189	\$36,404
	Escalation					\$0
	Project Contingency	\$2,070,463	\$920,206	\$828,185	\$782,175	\$4,601,028
	Sub Total	\$9,380,504	\$4,265,569	\$3,928,405	\$3,631,491	\$21,205,969
	Owners Costs					\$0
	Round Off	\$31				\$31
	GRAND TOTAL	\$9,380,535	\$4,265,569	\$3,928,405	\$3,631,491	\$21,206,000

Prepared By:

Date:

Approved By:

Date:



Eichleay Engineers Inc. of California

ESTIMATE SUMMARY SHEET

Client Name: Wine Institute

Estimated By: P.H.M.

Job Number: 30913

PRELIMINARY ESTIMATE

Checked By: R.H.

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

Rev. 2

Date: 6/24/05

W/O Escalation & Owners Costs						
CODE	ITEM DESCRIPTION	TOTAL MHRS	TOTAL COSTS			TOTAL
			LABOR	MATL	SUBCON.	
	SUMMARY					
2.00	Site Construction		\$0	\$0	\$1,270,030	\$1,270,030
3.00	Concrete		\$0	\$0	\$444,950	\$444,950
4.00	Masonry		\$0	\$0	\$0	\$0
5.00	Metals		\$711,959	\$1,779,595	\$40,000	\$2,531,554
6.00	Wood & Plastics		\$0	\$0	\$0	\$0
7.00	Thermal & Moisture Protection		\$0	\$0	\$0	\$0
8.00	Door & Windows		\$0	\$0	\$0	\$0
9.00	Finishes		\$0	\$0	\$0	\$0
10.00	Specialties		\$260	\$0	\$8,360	\$8,620
11.00	Equipment		\$0	\$0	\$0	\$0
12.00	Furnishings		\$0	\$0	\$0	\$0
13.00	Special Construction		\$0	\$0	\$0	\$0
14.00	Conveying Systems		\$0	\$0	\$0	\$0
15.00	Mechanical HVAC & Plumbing		\$0	\$0	\$0	\$0
16.00	Electrical		\$65,016	\$85,787	\$53,400	\$204,203
17.00	Instruments & Controls		\$140,550	\$672,230	\$125,000	\$937,780
18.00	Process Piping & Equipment		\$1,555,068	\$3,175,093	\$1,197,250	\$5,927,411
	Sub Total		\$2,472,663	\$5,712,705	\$3,138,990	\$11,324,548
	Tax & Freight (11%)					\$628,398
	General Conditions (8%)					\$956,236
	General Contractor Mark-Up (10%)					\$1,090,818
	Field Costs - Sub Total					\$13,999,999
	Design Fee Allowance (15%)					\$2,100,000
	Construction Management Allowance (3%)					\$420,000
	Plan Check & Permit Fee Allowance (2%)					\$48,539
	Third Party Inspection Allowance (1.5%)					\$36,404
	Escalation					
	Project Contingency					\$4,601,028
	Sub Total					\$21,205,970
	Owners Costs					\$0
	Round Off					\$30
	GRAND TOTAL					\$21,206,000

Prepared By: *P.H.M.*

Date: *6/24/05*

Approved By: *R.V. Hedges*

Date: *6/24/05*



Eichleay
Engineers Inc. of CA

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

PRELIMINARY ESTIMATE

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

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CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	030 - Concrete												
	VOC -1 Duct sections												
1	Install drilled piers (20) rack #1	20	ea					1,000.00	1,000.00			20,000	20,000
1	Install drilled piers (20) rack #2	20	ea					1,000.00	1,000.00			20,000	20,000
1	Install drilled piers (42) for main rack inside plant	42	ea					1,500.00	1,500.00			63,000	63,000
1	Install drilled piers (46) for main rack outside plant	46	ea					700.00	700.00			32,200	32,200
1	Install drilled piers (32) for main rack by VOC's	32	ea					700.00	700.00			22,400	22,400
1	Install foundation for VOC-1 & tank	110	cy					450.00	450.00			49,500	49,500
	VOC -2 Duct sections												
2	Install drilled piers (16) rack #3	16	ea					1,000.00	1,000.00			16,000	16,000
2	Install drilled piers (18) rack #4	16	ea					1,000.00	1,000.00			16,000	16,000
2	Install foundation for VOC-1 & tank	110	cy					450.00	450.00			49,500	49,500
	VOC -3 Duct sections												
3	Install drilled piers (16) rack #6	16	ea					1,000.00	1,000.00			16,000	16,000
3	Install drilled piers (20) rack #7	20	ea					1,000.00	1,000.00			20,000	20,000
3	Install foundation for VOC-1 & tank	110	cy					450.00	450.00			49,500	49,500
	VOC -4 Duct sections												
4	Install drilled piers (0) rack #4		ea					1,000.00	1,000.00				
4	Install drilled piers (20) rack #5	20	ea					1,000.00	1,000.00			20,000	20,000
4	Install foundation for VOC-1 & tank	110	cy					450.00	450.00			49,500	49,500
	Allowance for building pad	3	cy					450.00	450.00			1,350	1,350
	TOTAL - Concrete											444,950	444,950



Eichleay
Engineers Inc. of CA.

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

PRELIMINARY ESTIMATE

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	050 - Metals												
	VOC -1 Duct Section												
1	Fab & install main duct rack frames (inside unit - 45 ft)	21	ea	20	420	65.00	6,500.00		7,800.00	27,300	136,500		163,800
1	Fab & install main duct rack top connection members	640	ft	0.75	480	65.00	45.00		93.75	31,200	28,800		60,000
1	Fab & install main duct rack bottom connection members	640	ft	0.75	480	65.00	45.00		93.75	31,200	28,800		60,000
1	Fab & install main duct rack top cross bracing	80	ea	6	480	65.00	690.00		1,080.00	31,200	55,200		86,400
1	Fab & install main duct rack lower cross bracing	40	ea	6	240	65.00	950.00		1,340.00	15,600	38,000		53,600
1	Fab & install main duct rack frames (outside unit - 25 ft)	23	ea	10	230	65.00	4,420.00		5,070.00	14,950	101,660		116,610
1	Fab & install main duct rack top connection members	680	ft	0.5	340	65.00	45.00		77.50	22,100	30,600		52,700
1	Fab & install main duct rack top cross bracing	92	ea	4	368	65.00	600.00		860.00	23,920	55,200		79,120
1	Fab & install main duct rack lower cross bracing	22	ea	4	88	65.00	700.00		960.00	5,720	15,400		21,120
1	Fab & install main duct rack frames (VOC area)	16	ea	4	64	65.00	1,430.00		1,690.00	4,160	22,880		27,040
1	3' wide grating on main rack	2700	sf	0.15	405	65.00	19.00		28.75	26,325	51,300		77,625
1	handrails	1800	lf	0.3	540	65.00	75.00		94.50	35,100	135,000		170,100
1	Allowance for grating from main rack to existing catwalks	1	lot	50	50	65.00	5,000.00		8,250.00	3,250	5,000		8,250
1	Allowance for caged ladders	200	ft	0.5	100	65.00	50.00		82.50	6,500	10,000		16,500
1	15 x 8 towers	5	ea	80	400	65.00	14,000.00		19,200.00	26,000	70,000		96,000
1	15' top level connection beams	8	ea	8	64	65.00	550.00		1,070.00	4,160	4,400		8,560
1	cross bracing on top open sections	4	ea	8	32	65.00	300.00		820.00	2,080	1,200		3,280
1	15 x 15 towers	5	ea	80	400	65.00	18,000.00		23,200.00	26,000	90,000		116,000
1	15' top level connection beams	8	ea	8	64	65.00	550.00		1,070.00	4,160	4,400		8,560
1	cross bracing on top open sections	4	ea	8	32	65.00	300.00		820.00	2,080	1,200		3,280
1	3' wide grating on walkway 1 & 2	810	sf	0.15	121.5	65.00	19.00		28.75	7,898	15,390		23,288
1	3' wide grating to tanks	510	sf	0.15	76.5	65.00	19.00		28.75	4,973	9,690		14,663
1	handrails	920	lf	0.3	276	65.00	75.00		94.50	17,940	69,000		86,940
1	grating to existing catwalks	120	sf	0.15	18	65.00	19.00		28.75	1,170	2,280		3,450



Eichleay
Engineers Inc. of CA

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

PRELIMINARY ESTIMATE

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	VOC-2 Duct Section												
2	15 x 15 towers	4	ea	20	80	65.00	20,000.00		21,300.00	5,200	80,000		85,200
2	20' top level connection beams	6	ea	2	12	65.00	700.00		830.00	780	4,200		4,980
2	cross bracing on top open sections	3	ea	2	6	65.00	400.00		530.00	390	1,200		1,590
2	15 x 15 towers	3	ea	20	60	65.00	20,000.00		21,300.00	3,900	60,000		63,900
2	15' top level connection beams	4	ea	2	8	65.00	550.00		680.00	520	2,200		2,720
2	cross bracing on top open sections	2	ea	2	4	65.00	300.00		430.00	260	600		860
2	15 x 20 towers - shared vertical columns	2	ea	20	40	65.00	20,000.00		21,300.00	2,600	40,000		42,600
2	15 x 15 tower	1	ea	20	20	65.00	10,000.00		11,300.00	1,300	10,000		11,300
2	3' wide grating on walkway 3, 4' wide on walkway 4	945	sf	0.15	141.75	65.00	19.00		28.75	9,214	17,955		27,169
2	3' wide grating to tanks	360	sf	0.15	54	65.00	19.00		28.75	3,510	6,840		10,350
2	handrails	820	lf	0.3	246	65.00	75.00		94.50	15,990	61,500		77,490
2	grating to existing catwalks	165	sf	0.15	24.75	65.00	19.00		28.75	1,609	3,135		4,744
	VOC-3 Duct Section												
3	20 x 8 towers	3	ea	20	60	65.00	15,000.00		16,300.00	3,900	45,000		48,900
3	20' top level connection beams	6	ea	2	12	65.00	700.00		830.00	780	4,200		4,980
3	cross bracing on top open sections	3	ea	2	6	65.00	400.00		530.00	390	1,200		1,590
3	15 x 8 towers	1	ea	20	20	65.00	14,000.00		15,300.00	1,300	14,000		15,300
3	15 x 15 towers	5	ea	20	100	65.00	18,000.00		19,300.00	6,500	90,000		96,500
3	15' top level connection beams	8	ea	2	16	65.00	550.00		680.00	1,040	4,400		5,440
3	cross bracing on top open sections	4	ea	2	8	65.00	300.00		430.00	520	1,200		1,720
3	3' wide grating on walkway 6 & 7	810	sf	0.15	121.5	65.00	19.00		28.75	7,898	15,390		23,288
3	3' wide grating to tanks	510	sf	0.15	76.5	65.00	19.00		28.75	4,973	9,690		14,663
3	handrails	920	lf	0.3	276	65.00	75.00		94.50	17,940	69,000		86,940
3	grating to existing catwalks	60	sf	0.15	9	65.00	19.00		28.75	585	1,140		1,725



Eichle
Engineers Inc. of CA

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

PRELIMINARY ESTIMATE

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	VOC-4 Duct Section												
4	15 x 15 towers	5	ea	20	100	65.00	18,000.00		19,300.00	6,500	90,000		96,500
4	15' top level connection beams	8	ea	2	16	65.00	550.00		680.00	1,040	4,400		5,440
4	cross bracing on top open sections	4	ea	2	8	65.00	300.00		430.00	520	1,200		1,720
4	shared end section with voc-2	1	ea	40	40	65.00	10,000.00		12,600.00	2,600	10,000		12,600
4	3' wide grating on walkway 7	405	sf	0.15	60.75	65.00	19.00		28.75	3,949	7,695		11,644
4	3' wide grating to tanks	450	sf	0.15	67.5	65.00	19.00		28.75	4,388	8,550		12,938
4	handrails	840	lf	0.3	252	65.00	75.00		94.50	16,380	63,000		79,380
ALL	Allowance for additional supports & grating	1	lot	500	500	65.00	70,000.00		102,500	32,500	70,000		102,500
1	Crane to install main rack outside plant area	3	wks					2,000.00	2,000.00			6,000	6,000
1	(40 ton)	1	lot	120	120	75.00			9,000.00	9,000			9,000
1	Allowance for small cranes to position steel (3)	6	mo	160	960	75.00		2,000.00	14,000.00	72,000		12,000	84,000
2	Allowance for small cranes to position steel (2)	2	mo	160	320	75.00		2,000.00	14,000.00	24,000		4,000	28,000
3	Allowance for small cranes to position steel (2)	2	mo	160	320	75.00		2,000.00	14,000.00	24,000		4,000	28,000
4	Allowance for small cranes to position steel (2)	2	mo	160	320	75.00		2,000.00	14,000.00	24,000		4,000	28,000
ALL	allowance for overtime to build structures	1	lot	1000	1000	25.00			25,000.00	25,000			25,000
	to work around helicopter usage												
ALL	Allowance to touch up paint	1	lot					10,000.00	10,000.00			10,000	10,000
	TOTAL - Metals				11255					711,959	1,779,595	40,000	2,531,554



Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

Rev. 2 Date: 6/24/05

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CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	010 - Specialties												
1	Allowance for modular structure for operator at the VOC units	96	sf					85.00	85.00			8,160	8,160
1	Allowance to set in place & tie down	1	lot	4	4	65.00		200.00	460.00	260		200	460
	TOTAL - Specalties				4					260		8,360	8,620

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

Eichleay
Engineers Inc. of CA**PRELIMINARY ESTIMATE**

Estimated By: P.H.M.

Checked By: R.H.

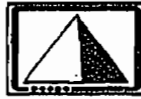
Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	016 - Electrical												
	POWER DISTRIBUTION												
	VOC -1												
1	DISCONNECT SWITCH FUSABLE, 400A, 600V, 3PH, 3W	1	EA	10	10	75.00	2,025.00		2,775.00	750	2,025		2,775
1	#600 MCM CONDUCTOR	1.2	CLF	6.154	7	75.00	475.00		936.55	554	570		1,124
1	#2 GROUND	5	CLF	1.778	9	75.00	47.00		180.35	667	235		902
1	3" RIGID ALUMINUM	40	LF	0.18	7	75.00	9.45		22.95	540	378		918
1	3" IN-LINE PULL FITTINGS	2	EA	2.7	5	75.00	415.00		617.50	405	830		1,235
1	16X16X6 PULL BOX	1	EA	6.15	6	75.00	810.00		1,271.25	461	810		1,271
1	3"90-DEGREE RGS,PVC COATED	2	EA	1.9	4	75.00	69.00		211.50	285	138		423
1	FUSE 400A	3	EA	0.333	1	75.00	130.00		154.98	75	390		465
1	3000A main switchboard	1	EA	28.57	29	75.00	4,675.00		6,817.75	2,143	4,675		6,818
1	3000A 600V CIRCUIT BREAKER	1	EA	36.36	36	75.00	24,300.00		27,027.00	2,727	24,300		27,027
1	BUS CIRCUIT BREAKER 400A 480V 3PH	1	EA	3	3	75.00	3,100.00		3,325.00	225	3,100		3,325
1	MISC SUPPORTS, FITTINGS, TERMINATIONS	1	LOT							1,766	7,490		9,257
1	CHECKOUT AND TESTING	1	LOT	100	100	75.00			7,500.00	7,500			7,500
	VOC -2												
2	DISCONNECT SWITCH FUSABLE, 600A, 600V, 3PH, 3W	1	EA	16	16	75.00	3,000.00		4,200.00	1,200	3,000		4,200
2	#600 MCM CONDUCTOR	2.4	CLF	7.3	18	75.00	585.00		1,132.50	1,314	1,404		2,718
2	#2 GROUND	5	CLF	1.778	9	75.00	47.00		180.35	667	235		902
2	3" RIGID ALUMINUM	80	LF	0.18	14	75.00	9.45		22.95	1,080	756		1,836
2	3" IN-LINE PULL FITTINGS	2	EA	2.7	5	75.00	415.00		617.50	405	830		1,235
2	16X16X6 PULL BOX	1	EA	6.15	6	75.00	810.00		1,271.25	461	810		1,271
2	3"90-DEGREE RGS,PVC COATED	2	EA	1.9	4	75.00	69.00		211.50	285	138		423
2	FUSE 400A	3	EA	0.333	1	75.00	150.00		174.98	75	450		525
2	BUS CIRCUIT BREAKER 400A 480V 3PH	1	EA	5	5	75.00	3,775.00		4,150.00	375	3,775		4,150
2	MISC SUPPORTS, FITTINGS, TERMINATIONS	1	LOT							1,172	2,280		3,452
2	CHECKOUT AND TESTING	1	LOT	100	100	75.00			7,500.00	7,500			7,500

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

Eichl
Engineers Inc. of CA**PRELIMINARY ESTIMATE**

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	VOC -3												
3	DISCONNECT SWITCH FUSABLE, 400A, 600V, 3PH, 3W	1	EA	10	10	75.00	2,025.00		2,775.00	750	2,025		2,775
3	#600 MCM CONDUCTOR	3.6	CLF	6.154	22	75.00	475.00		936.55	1,662	1,710		3,372
3	#2 GROUND	5	CLF	1.778	9	75.00	47.00		180.35	667	235		902
3	3" RIGID ALUMINUM	120	LF	0.18	22	75.00	9.45		22.95	1,620	1,134		2,754
3	3" IN-LINE PULL FITTINGS	2	EA	2.7	5	75.00	415.00		617.50	405	830		1,235
3	16X16X6 PULL BOX	1	EA	6.15	6	75.00	810.00		1,271.25	461	810		1,271
3	3"90-DEGREE RGS,PVC COATED	2	EA	1.9	4	75.00	69.00		211.50	285	138		423
3	FUSE 400A	3	EA	0.333	1	75.00	130.00		154.98	75	390		465
3	BUS CIRCUIT BREAKER 400A 480V 3PH	1	EA	3	3	75.00	3,100.00		3,325.00	225	3,100		3,325
3	MISC SUPPORTS, FITTINGS, TERMINATIONS	1	LOT							1,230	2,074		3,304
3	CHECKOUT AND TESTING	1	LOT	100	100	75.00			7,500.00	7,500			7,500
	VOC -4												
4	DISCONNECT SWITCH FUSABLE, 400A, 600V, 3PH, 3W	1	EA	10	10	75.00	2,025.00		2,775.00	750	2,025		2,775
4	#600 MCM CONDUCTOR	6	CLF	6.154	37	75.00	475.00		936.55	2,769	2,850		5,619
4	#2 GROUND	5	CLF	1.778	9	75.00	47.00		180.35	667	235		902
4	3" RIGID ALUMINUM	200	LF	0.18	36	75.00	9.45		22.95	2,700	1,890		4,590
4	3" IN-LINE PULL FITTINGS	2	EA	2.7	5	75.00	415.00		617.50	405	830		1,235
4	16X16X6 PULL BOX	1	EA	6.15	6	75.00	810.00		1,271.25	461	810		1,271
4	3"90-DEGREE RGS,PVC COATED	2	EA	1.9	4	75.00	69.00		211.50	285	138		423
4	FUSE 400A	3	EA	0.333	1	75.00	130.00		154.98	75	390		465
4	BUS CIRCUIT BREAKER 400A 480V 3PH	1	EA	3	3	75.00	3,100.00		3,325.00	225	3,100		3,325
4	MISC SUPPORTS, FITTINGS, TERMINATIONS	1	LOT							1,667	2,454		4,121
4	CHECKOUT AND TESTING	1	LOT	100	100	75.00			7,500.00	7,500			7,500



Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
1	Allowance for installing lighting at VOC areas	1	lot					40,000.00	40,000.00			40,000	40,000
1	Allowance for installing lighting on main duct	670	ft					20.00	20.00			13,400	13,400
	TOTAL - Electrical				789					65,016	85,787	53,400	204,203



Eichle
Engineers Inc. of CA

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

PRELIMINARY ESTIMATE

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Checked By: R.H.

Rev. 2 Date: 6/24/05

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CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	017 - Instruments & Controls												
ALL	Ethanol Analyzer (at RTO)	4	ea	16	64	75.00	20,000.00		21,200.00	4,800	80,000		84,800
ALL	Capacitance probe / transmitter	60	ea	4	240	75.00	1,200.00		1,500.00	18,000	72,000		90,000
ALL	Actuated BF vent valve - 12" fermenter	60	ea	4	240	75.00	6,500.00		6,800.00	18,000	390,000		408,000
ALL	Actuated BF vent valve - 36" KO pots	4	ea	8	32	75.00	10,000.00		10,600.00	2,400	40,000		42,400
ALL	Local hand switch for BF closing	64	ea	4	256	75.00	200.00		500.00	19,200	12,800		32,000
ALL	Relief Vent - KO pots	4	ea	4	16	75.00	3,000.00		3,300.00	1,200	12,000		13,200
	Level transmitter & indicator					75.00	1,200.00		1,200.00				
ALL	High level switch	4	ea	4	16	75.00	750.00		1,050.00	1,200	3,000		4,200
ALL	Low level switch	4	ea	4	16	75.00	750.00		1,050.00	1,200	3,000		4,200
ALL	Level gauge	4	ea	2	8	75.00	1,000.00		1,150.00	600	4,000		4,600
ALL	Pressure gauge	16	ea	1	16	75.00	300.00		375.00	1,200	4,800		6,000
ALL	Pressure transmitter	4	ea	4	16	75.00	1,500.00		1,800.00	1,200	6,000		7,200
ALL	Temperature gauge w/ TW	16	ea	4	64	75.00	300.00		600.00	4,800	4,800		9,600
1	Temperature transmitter, RTD, TW	2	ea	4	8	75.00	1,200.00		1,500.00	600	2,400		3,000
	Relief valves						300.00		300.00				
	Pressure regulator - liquid						300.00		300.00				
	Pressure regulator - steam						1,500.00		1,500.00				
ALL	On- off control valve Stations	4		4	16	75.00	1,000.00		1,300.00	1,200	4,000		5,200
ALL	Conduit, factored 20' per tank	1200	ft	0.2	240	75.00	8.00		23.00	18,000	9,600		27,600
ALL	Conduit, factored 300' per RTO	1200	ft	0.2	240	75.00	8.00		23.00	18,000	9,600		27,600
ALL	Wire, factored 50' per instrument/valve	7300	ft	0.02	146	75.00	0.10		1.60	10,950	730		11,680
ALL	Allowance for air tubing	1	lot	240	240	75.00	500.00		18,500.00	18,000	500		18,500



Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

Rev. 2 Date: 6/24/05

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Eichle
Engineers Inc. of CA

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

PRELIMINARY ESTIMATE

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	018 - Process Piping & Equipment												
	VOC Control Equipment												
1	VOC-1 16,000 scfm RTO unit	1	ea	200	200	65.00	416,000		429,000	13,000	416,000		429,000
2	VOC-2 22,000 scfm RTO unit	1	ea	250	250	65.00	503,000		519,250	16,250	503,000		519,250
3	VOC-3 13,000 scfm RTO unit	1	ea	200	200	65.00	367,000		380,000	13,000	367,000		380,000
4	VOC-4 13,000 scfm RTO unit	1	ea	200	200	65.00	367,000		380,000	13,000	367,000		380,000
all	Adder for RTO for higher SP blower & O2 control loop	4	ea				35,000.00		35,000.00		140,000		140,000
all	Allowance for stainless stack & alum. Grating & handrails	4	ea				15,000.00		15,000.00		60,000		60,000
	Install refractory in VOC's												
1	VOC-1	1	lot	80	80	70.00			5,600.00	5,600			5,600
2	VOC-2	1	lot	100	100	70.00			7,000.00	7,000			7,000
3	VOC-3	1	lot	80	80	70.00			5,600.00	5,600			5,600
4	VOC-4	1	lot	80	80	70.00			5,600.00	5,600			5,600
	Knock out vessels												
1	KO Vessel for VOC-1 - 5000 gal	1	ea	20	20	65.00	37,000.00		38,300.00	1,300	37,000		38,300
2	KO Vessel for VOC-2 - 7000 gal	1	ea	20	20	65.00	45,000.00		46,300.00	1,300	45,000		46,300
3	KO Vessel for VOC-3 - 4000 gal	1	ea	20	20	65.00	33,000.00		34,300.00	1,300	33,000		34,300
4	KO Vessel for VOC-4 - 4000 gal	1	ea	20	20	65.00	33,000.00		34,300.00	1,300	33,000		34,300
	Nozzle Fabrication/Installation at each tank												
all	12" Nozzle(Fabricate)	60	ea	4	240	65.00	215.00		475.00	15,600	12,900		28,500
all	Machine Cut Hole(Specialty Service)	60	ea	2	120	65.00	20.00	600.00	750.00	7,800	1,200	36,000	45,000
all	12" Nozzle(Install)	60	ea	4	240	65.00			260.00	15,600			15,600
all	2" Nozzle(Fabricate)	60	ea	1.5	90	65.00	40.00		137.50	5,850	2,400		8,250
all	Drill Hole W/Hole Saw Auger	60	ea	1	60	65.00			65.00	3,900			3,900
all	2" Nozzle(Install)	60	ea	3	180	65.00			195.00	11,700			11,700



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Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
all	36" Nozzle(Fabricate)	60	ea	8	480	65.00	350.00		870.00	31,200	21,000		52,200
all	Machine Cut Hole(Specialty Service)	60	ea	4	240	65.00	20.00	600.00	880.00	15,600	1,200	36,000	52,800
all	36" Nozzle(Install)	60	ea	10	600	65.00			650.00	39,000			39,000
	Allowance for passivation												
all	Install gel	180	ea	4	720	65.00	150.00		410.00	46,800	27,000		73,800
all	neutralize & flush & dry	180	ea	2	360	65.00	20.00		150.00	23,400	3,600		27,000
all	Insulation Removal	60	ea	2	120	65.00			130.00	7,800			7,800
all	Scaffolding - 38' tanks(Install)	12	ea	24	288	65.00			1,560.00	18,720			18,720
ALL	Scaffolding - 24' to 28' tanks(Install)	48	ea	20	960	65.00			1,300.00	62,400			62,400
all	Scaffolding - 38' tanks(Remove)	12	ea	12	144	65.00			780.00	9,360			9,360
all	Scaffolding - 24' to 28' tanks(Remove)	48	ea	10	480	65.00			650.00	31,200			31,200
	Ducting Installation												
1	VOC-1												
1	10" Duct	36	ft				54.00		54.00		1,944		1,944
1	10" Duct misc. fittings	1	lot				800.00		800.00		800		800
1	Bolt up	10	ea	1.5	15	65.00			97.50	975			975
1	Handle	9	ea	2.08	18.72	65.00			135.20	1,217			1,217
1	Install	2	lot	2	4	65.00			130.00	260			260
1	12" Duct	40	ft				62.00		62.00		2,480		2,480
1	12" Duct misc. fittings	1	lot				1,000.00		1,000.00		1,000		1,000
1	Bolt up	12	ea	1.5	18	65.00			97.50	1,170			1,170
1	Handle	10	ea	2.08	20.8	65.00			135.20	1,352			1,352
1	Install	2	lot	2	4	65.00			130.00	260			260
1	16" Duct	24	ft				77.00		77.00		1,848		1,848
1	16" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
1	Bolt up	8	ea	2	16	65.00			130.00	1,040			1,040



Eichle
Engineers Inc. of CA

Client Name: Wine Institute

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Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

PRELIMINARY ESTIMATE

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Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
1	Handle	6	ea	3	18	65.00			195.00	1,170			1,170
1	Install	2	lot	2	4	65.00			130.00	260			260
1	18" Duct	45	ft				86.00		86.00		3,870		3,870
1	18" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
1	Bolt up	13	ea	3	39	65.00			195.00	2,535			2,535
1	Handle	11	ea	3.52	38.72	65.00			228.80	2,517			2,517
1	Install	3	lot	2	6	65.00			130.00	390			390
1	20" Duct	40	ft				92.00		92.00		3,680		3,680
1	20" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
1	Bolt up	12	ea	4	48	65.00			260.00	3,120			3,120
1	Handle	10	ea	4.6	46	65.00			299.00	2,990			2,990
1	Install	3	lot	3	9	65.00			195.00	585			585
1	22" Duct	60	ft				99.00		99.00		5,940		5,940
1	22" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
1	Bolt up	18	ea	4	72	65.00			260.00	4,680			4,680
1	Handle	16	ea	4.6	73.6	65.00			299.00	4,784			4,784
1	Install	4	lot	3	12	65.00			195.00	780			780
1	24" Duct	18	ft				106.00		106.00		1,908		1,908
1	24" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
1	Bolt up	6	ea	4	24	65.00			260.00	1,560			1,560
1	Handle	5	ea	4.6	23	65.00			299.00	1,495			1,495
1	Install	1	lot	3	3	65.00			195.00	195			195
1	28" Duct	85	ft				119.00		119.00		10,115		10,115
1	28" Duct misc. fittings	1	lot				4,000.00		4,000.00		4,000		4,000
1	Bolt up	22	ea	5.5	121	65.00			357.50	7,865			7,865
1	Handle	21	ea	5.32	111.72	65.00			345.80	7,262			7,262
1	Install	5	lot	3	15	65.00			195.00	975			975
1	36" Duct	385	ft				199.00		199.00		76,615		76,615
1	36" Duct misc. fittings	1	lot				20,000.00		20,000.00		20,000		20,000



Eichleay
Engineers Inc. of CA

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Job Number: 30913

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters

PRELIMINARY ESTIMATE

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRs	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
1	Bolt up	100	ea	6.5	650	65.00			422.50	42,250			42,250
1	Handle	96	ea	7.2	691.2	65.00			468.00	44,928			44,928
1	Install	20	lot	3	60	65.00			195.00	3,900			3,900
	VOC-2												
2	12" Duct	75	ft				62.00		62.00		4,650		4,650
2	12" Duct misc. fittings	1	lot				1,000.00		1,000.00		1,000		1,000
2	Bolt up	21	ea	1.5	31.5	65.00			97.50	2,048			2,048
2	Handle	19	ea	2.08	39.52	65.00			135.20	2,569			2,569
2	Install	4	lot	2	8	65.00			130.00	520			520
2	18" Duct	65	ft				86.00		86.00		5,590		5,590
2	18" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
2	Bolt up	19	ea	3	57	65.00			195.00	3,705			3,705
2	Handle	17	ea	3.52	59.84	65.00			228.80	3,890			3,890
2	Install	3	lot	2	6	65.00			130.00	390			390
2	22" Duct	50	ft				99.00		99.00		4,950		4,950
2	22" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
2	Bolt up	15	ea	4	60	65.00			260.00	3,900			3,900
2	Handle	13	ea	4.6	59.8	65.00			299.00	3,887			3,887
2	Install	3	lot	3	9	65.00			195.00	585			585
2	24" Duct	35	ft				106.00		106.00		3,710		3,710
2	24" Duct misc. fittings	1	lot				3,000.00		3,000.00		3,000		3,000
2	Bolt up	11	ea	4	44	65.00			260.00	2,860			2,860
2	Handle	9	ea	4.6	41.4	65.00			299.00	2,691			2,691
2	Install	2	lot	3	6	65.00			195.00	390			390
2	28" Duct	15	ft				119.00		119.00		1,785		1,785
2	28" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
2	Bolt up	5	ea	5.5	27.5	65.00			357.50	1,788			1,788
2	Handle	4	ea	5.32	21.28	65.00			345.80	1,383			1,383



Eichle
Engineers Inc. of CA

Client Name: Wine Institute

Job Number: 30913

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Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
2	Install	1	lot	3	3	65.00			195.00	195			195
2	30" Duct	25	ft				128.00		128.00		3,200		3,200
2	30" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
2	Bolt up	8	ea	5.5	44	65.00			357.50	2,860			2,860
2	Handle	6	ea	5.32	31.92	65.00			345.80	2,075			2,075
2	Install	1	lot	3	3	65.00			195.00	195			195
2	32" Duct	265	ft				177.00		177.00		46,905		46,905
2	32" Duct misc. fittings	1	lot				4,500.00		4,500.00		4,500		4,500
2	Bolt up	68	ea	6	408	65.00			390.00	26,520			26,520
2	Handle	66	ea	6	396	65.00			390.00	25,740			25,740
2	Install	13	lot	3	39	65.00			195.00	2,535			2,535
2	42" Duct	415	ft				242.00		242.00		100,430		100,430
2	42" Duct misc. fittings	1	lot				25,000.00		25,000.00		25,000		25,000
2	Bolt up	115	ea	6.5	747.5	65.00			422.50	48,588			48,588
2	Handle	104	ea	7.12	740.48	65.00			462.80	48,131			48,131
2	Install	21	lot	4	84	65.00			260.00	5,460			5,460
	VOC-3												
3	6" Duct	25	ft				38.00		38.00		950		950
3	6" Duct misc. fittings	1	lot				500.00		500.00		500		500
3	Bolt up	7	ea	1	7	65.00			65.00	455			455
3	Handle	6	ea	1.4	8.4	65.00			91.00	546			546
3	Install	1	lot	1.5	1.5	65.00			97.50	98			98
3	10" Duct	35	ft				54.00		54.00		1,890		1,890
3	10" Duct misc. fittings	1	lot				1,000.00		1,000.00		1,000		1,000
3	Bolt up	11	ea	1.5	16.5	65.00			97.50	1,073			1,073
3	Handle	9	ea	1.72	15.48	65.00			111.80	1,006			1,006
3	Install	2	lot	2	4	65.00			130.00	260			260
3	12" Duct	70	ft				62.00		62.00		4,340		4,340

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - Livingston West Side Fermenters



Eichleay

Engineers Inc. of CA

PRELIMINARY ESTIMATE

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
3	12" Duct misc. fittings	1	lot				1,000.00		1,000.00		1,000		1,000
3	Bolt up	20	ea	1.5	30	65.00			97.50	1,950			1,950
3	Handle	18	ea	2.08	37.44	65.00			135.20	2,434			2,434
3	Install	3	lot	2	6	65.00			130.00	390			390
3	16" Duct	48	ft				69.00		69.00		3,312		3,312
3	16" Duct misc. fittings	1	lot				1,500.00		1,500.00		1,500		1,500
3	Bolt up	14	ea	2.5	35	65.00			162.50	2,275			2,275
3	Handle	12	ea	3	36	65.00			195.00	2,340			2,340
3	Install	3	lot	2	6	65.00			130.00	390			390
3	18" Duct	22	ft				86.00		86.00		1,892		1,892
3	18" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
3	Bolt up	8	ea	3	24	65.00			195.00	1,560			1,560
3	Handle	6	ea	3.52	21.12	65.00			228.80	1,373			1,373
3	Install	1	lot	2	2	65.00			130.00	130			130
3	20" Duct	8	ft				92.00		92.00		736		736
3	20" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
3	Bolt up	3	ea	4	12	65.00			260.00	780			780
3	Handle	2	ea	4.6	9.2	65.00			299.00	598			598
3	Install	1	lot	3	3	65.00			195.00	195			195
3	22" Duct	28	ft				99.00		99.00		2,772		2,772
3	22" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
3	Bolt up	9	ea	4	36	65.00			260.00	2,340			2,340
3	Handle	7	ea	4.6	32.2	65.00			299.00	2,093			2,093
3	Install	2	lot	3	6	65.00			195.00	390			390
3	24" Duct	20	ft				106.00		106.00		2,120		2,120
3	24" Duct misc. fittings	1	lot				3,000.00		3,000.00		3,000		3,000
3	Bolt up	7	ea	4	28	65.00			260.00	1,820			1,820
3	Handle	5	ea	4.6	23	65.00			299.00	1,495			1,495
3	Install	1	lot	3	3	65.00			195.00	195			195



Eichleay
Engineers Inc. of CA

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Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
3	26" Duct	8	ft				114.00		114.00		912		912
3	26" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
3	Bolt up	3	ea	5	15	65.00			325.00	975			975
3	Handle	2	ea	4.72	9.44	65.00			306.80	614			614
3	Install	1	lot	3	3	65.00			195.00	195			195
3	28" Duct	80	ft				119.00		119.00		9,520		9,520
3	28" Duct misc. fittings	1	lot				3,000.00		3,000.00		3,000		3,000
3	Bolt up	22	ea	5.5	121	65.00			357.50	7,865			7,865
3	Handle	20	ea	5.32	106.4	65.00			345.80	6,916			6,916
3	Install	4	lot	3	12	65.00			195.00	780			780
3	32" Duct	765	ft				177.00		177.00		135,405		135,405
3	32" Duct misc. fittings	1	lot				4,500.00		4,500.00		4,500		4,500
3	Bolt up	204	ea	6	1224	65.00			390.00	79,560			79,560
3	Handle	192	ea	6	1152	65.00			390.00	74,880			74,880
3	Install	38	lot	3	114	65.00			195.00	7,410			7,410
	VOC-4												
4	10" Duct	52	ft				54.00		54.00		2,808		2,808
4	10" Duct misc. fittings	1	lot				1,000.00		1,000.00		1,000		1,000
4	Bolt up	15	ea	1.5	22.5	65.00			97.50	1,463			1,463
4	Handle	13	ea	1.72	22.36	65.00			111.80	1,453			1,453
4	Install	2	lot	2	4	65.00			130.00	260			260
4	12" Duct	52	ft				62.00		62.00		3,224		3,224
4	12" Duct misc. fittings	1	lot				1,000.00		1,000.00		1,000		1,000
4	Bolt up	15	ea	1.5	22.5	65.00			97.50	1,463			1,463
4	Handle	13	ea	2.08	27.04	65.00			135.20	1,758			1,758
4	Install	2	lot	2	4	65.00			130.00	260			260
4	16" Duct	38	ft				77.00		77.00		2,926		2,926
4	16" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000



Eichle
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Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
4	Bolt up	12	ea	2	24	65.00			130.00	1,560			1,560
4	Handle	10	ea	3	30	65.00			195.00	1,950			1,950
4	Install	3	lot	2	6	65.00			130.00	390			390
4	18" Duct	50	ft				86.00		86.00		4,300		4,300
4	18" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
4	Bolt up	14	ea	3	42	65.00			195.00	2,730			2,730
4	Handle	13	ea	3.52	45.76	65.00			228.80	2,974			2,974
4	Install	3	lot	2	6	65.00			130.00	390			390
4	20" Duct	18	ft				92.00		92.00		1,656		1,656
4	20" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
4	Bolt up	7	ea	3.5	24.5	65.00			227.50	1,593			1,593
4	Handle	5	ea	4.12	20.6	65.00			267.80	1,339			1,339
4	Install	2	lot	2	4	65.00			130.00	260			260
4	22" Duct	30	ft				99.00		99.00		2,970		2,970
4	22" Duct misc. fittings	1	lot				2,000.00		2,000.00		2,000		2,000
4	Bolt up	9	ea	4	36	65.00			260.00	2,340			2,340
4	Handle	8	ea	4.6	36.8	65.00			299.00	2,392			2,392
4	Install	2	lot	3	6	65.00			195.00	390			390
4	24" Duct	30	ft				106.00		106.00		3,180		3,180
4	24" Duct misc. fittings	1	lot				3,000.00		3,000.00		3,000		3,000
4	Bolt up	9	ea	4	36	65.00			260.00	2,340			2,340
4	Handle	8	ea	4.6	36.8	65.00			299.00	2,392			2,392
4	Install	2	lot	3	6	65.00			195.00	390			390
4	26" Duct	85	ft				114.00		114.00		9,690		9,690
4	26" Duct misc. fittings	1	lot				3,000.00		3,000.00		3,000		3,000
4	Bolt up	24	ea	5	120	65.00			325.00	7,800			7,800
4	Handle	22	ea	4.72	103.84	65.00			306.80	6,750			6,750
4	Install	5	lot	3	15	65.00			195.00	975			975
4	32" Duct	715	ft				177.00		177.00		126,555		126,555



Eichleay
Engineers Inc. of CA

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Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
4	32" Duct misc. fittings	1	lot				4,500.00		4,500.00		4,500		4,500
4	Bolt up	190	ea	6	1140	65.00			390.00	74,100			74,100
4	Handle	178	ea	6	1068	65.00			390.00	69,420			69,420
4	Install	36	lot	3	108	65.00			195.00	7,020			7,020
1	Install an 10" duct bank duct	17	ea	48	816	65.00	4,545.00		7,665.00	53,040	77,265		130,305
3	Install an 6" tank duct bank duct	7	ea	46	322	65.00	4,202.00		7,192.00	20,930	29,414		50,344
3	Install an 10" duct bank duct	10	ea	48	480	65.00	4,545.00		7,665.00	31,200	45,450		76,650
2	Install an 12" duct bank duct	12	ea	48	576	65.00	4,699.00		7,819.00	37,440	56,388		93,828
4	Install an 10" duct bank duct	14	ea	48	672	65.00	4,545.00		7,665.00	43,680	63,630		107,310
ALL	Allowance for drilling & welding flange to main ducts at factory	60	ea				1,350.00		1,350.00		81,000		81,000
1	Install ducting from KO drum to VOC - 1 - 28" duct	1	lot	71.28	71.28	65.00	6,750.00		11,383.20	4,633	6,750		11,383
2	Install ducting from KO drum to VOC - 2 - 36" duct	1	lot	88.48	88.48	65.00	11,754.00		17,505.20	5,751	11,754		17,505
3	Install ducting from KO drum to VOC - 3 - 26" duct	1	lot	71.28	71.28	65.00	6,032.00		10,665.20	4,633	6,032		10,665
4	Install ducting from KO drum to VOC - 4 - 26" duct	1	lot	71.28	71.28	65.00	6,032.00		10,665.20	4,633	6,032		10,665
	Allowance to modify spreader on top of tanks												
1	VOC -1 Tanks	17	ea					1,800.00	1,800.00			30,600	30,600
2	VOC -2 Tanks	12	ea					1,800.00	1,800.00			21,600	21,600
3	VOC -3 Tanks	17	ea					1,800.00	1,800.00			30,600	30,600
4	VOC -4 Tanks	14	ea					1,800.00	1,800.00			25,200	25,200
ALL	Allowance for special rigging tools & frames	1	lot					10,000.00	10,000.00			10,000	10,000



Eichle
Engineers, Inc. of CA

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Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	Helicopter for steel & ducting												
	VOC-1 system												
1	assume 54 lifts	60	hrs					6,000.00	6,000.00			360,000	360,000
	crew per diem	8	days					750.00	750.00			6,000	6,000
	VOC-2 system												
2	assume 28 lifts	35	hrs					6,000.00	6,000.00			210,000	210,000
	crew per diem	5	days					750.00	750.00			3,750	3,750
	VOC-3 system												
3	assume 28 lifts	35	hrs					6,000.00	6,000.00			210,000	210,000
	crew per diem	5	days					750.00	750.00			3,750	3,750
	VOC-4 system												
4	assume 23 lifts	30	hrs					6,000.00	6,000.00			180,000	180,000
	crew per diem	5	days					750.00	750.00			3,750	3,750
	Allowance for crane to install VOC's												
1	VOC-1	3	wks	160	480	75.00		2,500.00	14,500.00	36,000		7,500	43,500
2	VOC-2	3	wks	160	480	75.00		2,500.00	14,500.00	36,000		7,500	43,500
3	VOC-3	3	wks	160	480	75.00		2,500.00	14,500.00	36,000		7,500	43,500
4	VOC-4	3	wks	160	480	75.00		2,500.00	14,500.00	36,000		7,500	43,500
ALL	allowance for overtime to build structures	1	lot	2000	2000	20.00			40,000.00	40,000			40,000
	to work around helicopter usage												
	TOTAL - Process Piping & Equipment				24987					1,555,068	3,175,093	1,197,250	5,927,411



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Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	Contingency												
2.00	Site Construction					25%	25%	25%				317,508	317,508
3.00	Concrete					50%	50%	50%				222,475	222,475
4.00	Masonry					25%	25%	25%					
5.00	Metals					30%	30%	30%		213,588	533,879	12,000	759,466
6.00	Wood & Plastics					25%	25%	25%					
7.00	Thermal & Moisture Protection					25%	25%	25%					
8.00	Door & Windows					25%	25%	25%					
9.00	Finishes					25%	25%	25%					
10.00	Specialties					25%	25%	25%		65		2,090	2,155
11.00	Equipment					25%	25%	25%					
12.00	Furnishings					25%	25%	25%					
13.00	Special Construction					25%	25%	25%					
14.00	Conveying Systems					25%	25%	25%					
15.00	Mechanical HVAC & Plumbing					25%	25%	25%					
16.00	Electrical					30%	30%	30%		19,505	25,736	16,020	61,261
17.00	Instruments & Controls					30%	30%	30%		42,165	201,669	37,500	281,334
18.00	Process Piping & Equipment					35%	35%	35%		544,274	1,111,283	419,038	2,074,594
	Design Fee Allowance							35%				735,000	735,000
	Construction Management Allowance							30%				126,000	126,000
	Plan Check & Permit Fee Allowance							25%				12,135	12,135
	Third Party Inspection Allowance							25%				9,101	9,101
	ROUND OFF		1										
	TOTAL - Contingency									819,596	1,872,566	1,908,866	4,601,028



Eichleay Engineers Inc. of California

ESTIMATE SUMMARY SHEET

Client Name: Wine Institute

Estimated By: P.H.M.

Job Number: 30913

PRELIMINARY ESTIMATE

Checked By: R.H.

Job Title: Fermenter VOC Emissions - LIVINGSTON UTILITIES

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	TOTAL COSTS				TOTAL
		RTO-1	RTO-2	RTO-3	RTO-4	
	SUMMARY					
2.00	Site Construction	\$9,350	\$0	\$0	\$0	\$9,350
3.00	Concrete	\$81,050	\$0	\$0	\$0	\$81,050
4.00	Masonry					\$0
5.00	Metals	\$5,000	\$5,000	\$5,000	\$5,000	\$20,000
6.00	Wood & Plastics					\$0
7.00	Thermal & Moisture Protection	\$89,600	\$34,400	\$29,600	\$11,000	\$164,600
8.00	Door & Windows					\$0
9.00	Finishes					\$0
10.00	Specialties					\$0
11.00	Equipment					\$0
12.00	Furnishings					\$0
13.00	Special Construction					\$0
14.00	Conveying Systems					\$0
15.00	Mechanical HVAC & Plumbing					\$0
16.00	Electrical	\$326,368	\$0	\$0	\$0	\$326,368
17.00	Instruments & Controls	\$116,680	\$37,631	\$37,632	\$37,632	\$229,575
18.00	Process Piping & Equipment	\$1,331,505	\$784,365	\$924,335	\$828,665	\$3,868,870
	Sub Total	\$1,959,553	\$861,396	\$996,567	\$882,297	\$4,699,813
	Tax & Freight	\$99,669	\$41,722	\$48,676	\$41,722	\$231,789
	General Conditions	\$164,738	\$72,249	\$83,619	\$73,922	\$394,528
	General Contractor Mark-Up	\$222,396	\$97,537	\$112,886	\$99,794	\$532,613
	Field Costs - Sub Total	\$2,446,156	\$1,072,904	\$1,241,748	\$1,097,735	\$5,858,743
	Design Fee Allowance	366,953	160,936	186,262	164,660	\$878,812
	Construction Management Allowance	\$73,391	\$32,187	\$37,252	\$32,932	\$175,762
	Plan Check & Permit Fee Allowance	\$777	\$325	\$380	\$325	\$1,808
	Third Party Inspection Allowance	\$583	\$244	\$285	\$244	\$1,356
	Escalation	\$112,069	\$50,101	\$59,830	\$54,113	\$276,113
	Project Contingency	\$847,578	\$354,800	\$413,934	\$354,800	\$1,971,112
	Sub Total	\$3,847,708	\$1,671,498	\$1,939,691	\$1,704,809	\$9,163,707
	Owners Costs	\$36,895	\$16,094	\$18,626	\$16,466	\$87,881
	Round Off	-\$404	\$409	-\$318	-\$275	-\$588
	GRAND TOTAL	\$3,884,000	\$1,688,000	\$1,958,000	\$1,721,000	\$9,251,000

Prepared By:

Date:

Approved By:

Date:



Eichleay Engineers Inc. of California

ESTIMATE SUMMARY SHEET

Client Name: Wine Institute

Estimated By: P.H.M.

Job Number: 30913

PRELIMINARY ESTIMATE

Checked By: R.H.

Job Title: Fermenter VOC Emissions - LIVINGSTON UTILITIES

Rev. 2

Date: 6/24/05

W/O ESCALATION & OWNERS COSTS						
CODE	ITEM DESCRIPTION	TOTAL COSTS				TOTAL
		RTO-1	RTO-2	RTO-3	RTO-4	
	SUMMARY					
2.00	Site Construction	\$9,350	\$0	\$0	\$0	\$9,350
3.00	Concrete	\$81,050	\$0	\$0	\$0	\$81,050
4.00	Masonry					\$0
5.00	Metals	\$5,000	\$5,000	\$5,000	\$5,000	\$20,000
6.00	Wood & Plastics					\$0
7.00	Thermal & Moisture Protection	\$89,600	\$34,400	\$29,600	\$11,000	\$164,600
8.00	Door & Windows					\$0
9.00	Finishes					\$0
10.00	Specialties					\$0
11.00	Equipment					\$0
12.00	Furnishings					\$0
13.00	Special Construction					\$0
14.00	Conveying Systems					\$0
15.00	Mechanical HVAC & Plumbing					\$0
16.00	Electrical	\$326,368	\$0	\$0	\$0	\$326,368
17.00	Instruments & Controls	\$116,680	\$37,631	\$37,632	\$37,632	\$229,575
18.00	Process Piping & Equipment	\$1,331,505	\$784,365	\$924,335	\$828,665	\$3,868,870
	Sub Total	\$1,969,553	\$861,396	\$996,567	\$882,297	\$4,699,813
	Tax & Freight	\$99,669	\$41,722	\$48,676	\$41,722	\$231,789
	General Conditions	\$164,738	\$72,249	\$83,619	\$73,922	\$394,528
	General Contractor Mark-Up	\$222,396	\$97,537	\$112,886	\$99,794	\$532,613
	Field Costs - Sub Total	\$2,446,356	\$1,072,904	\$1,241,748	\$1,097,735	\$5,858,743
	Design Fee Allowance	366,953	160,936	186,262	164,660	\$878,812
	Construction Management Allowance	\$73,391	\$32,187	\$37,252	\$32,932	\$175,762
	Plan Check & Permit Fee Allowance	\$777	\$325	\$380	\$325	\$1,808
	Third Party Inspection Allowance	\$583	\$244	\$285	\$244	\$1,356
	Escalation					\$0
	Project Contingency	\$847,578	\$354,800	\$413,934	\$354,800	\$1,971,112
	Sub Total	\$3,735,639	\$1,621,397	\$1,879,861	\$1,650,697	\$8,887,593
	Owners Costs					\$0
	Round Off	\$407				\$407
	GRAND TOTAL	\$3,736,046	\$1,621,397	\$1,879,861	\$1,650,697	\$8,888,000

Prepared By:

Date:

P.H.M.
6/24/05

Approved By:

Date:

R.W. Medges
6/24/05



Eichleay Engineers Inc. of California

ESTIMATE SUMMARY SHEET

Client Name: Wine Institute

Estimated By: P.H.M.

Job Number: 30913

PRELIMINARY ESTIMATE

Checked By: R.H.

Job Title: Fermenter VOC Emissions - LIVINGSTON UTILITIES

Rev. 2

Date: 6/24/05

W/O Escalation & Owners Costs						
CODE	ITEM DESCRIPTION	TOTAL MHRS	TOTAL COSTS			TOTAL
			LABOR	MAT'L	SUBCON.	
	SUMMARY					
2.00	Site Construction		\$0	\$0	\$9,350	\$9,350
3.00	Concrete		\$0	\$0	\$81,050	\$81,050
4.00	Masonry		\$0	\$0	\$0	\$0
5.00	Metals		\$0	\$0	\$20,000	\$20,000
6.00	Wood & Plastics		\$0	\$0	\$0	\$0
7.00	Thermal & Moisture Protection		\$0	\$0	\$164,600	\$164,600
8.00	Door & Windows		\$0	\$0	\$0	\$0
9.00	Finishes		\$0	\$0	\$0	\$0
10.00	Specialties		\$0	\$0	\$0	\$0
11.00	Equipment		\$0	\$0	\$0	\$0
12.00	Furnishings		\$0	\$0	\$0	\$0
13.00	Special Construction		\$0	\$0	\$0	\$0
14.00	Conveying Systems		\$0	\$0	\$0	\$0
15.00	Mechanical HVAC & Plumbing		\$0	\$0	\$0	\$0
16.00	Electrical		\$135,577	\$181,792	\$9,000	\$326,368
17.00	Instruments & Controls		\$78,975	\$150,600	\$0	\$229,575
18.00	Process Piping & Equipment		\$2,066,090	\$1,774,780	\$28,000	\$3,868,870
	Sub Total		\$2,280,642	\$2,107,172	\$312,000	\$4,699,813
	Tax & Freight (11%)					\$231,789
	General Conditions (8%)					\$394,528
	General Contractor Mark-Up (10%)					\$532,613
	Field Costs - Sub Total					\$5,858,743
	Design Fee Allowance (15%)					\$878,811
	Construction Management Allowance (3%)					\$175,762
	Plan Check & Permit Fee Allowance (2%)					\$1,808
	Third Party Inspection Allowance (1.5%)					\$1,356
	Escalation					
	Project Contingency					\$1,971,112
	Sub Total					\$8,887,593
	Owners Costs					\$0
	Round Off					\$407
	GRAND TOTAL					\$8,888,000

Prepared By:

Date:

Approved By

Date:



Job Title: Fermenter VOC Emissions • LIVINGSTON UTILITIES

Rev. 2 Date: 6/24/05

[illegible]



Job Title: Fermenter VOC Emissions - LIVINGSTON UTILITIES

PRELIMINARY ESTIMATE

Rev. 2 Date: 6/24/05

O:\30913\5.0 Design Documents\Estimates\Rev. 2\Living

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	070 - Thermal & Moisture Protection												
all	Allowance for Insulation for tank	1	lot					8,000.00	8,000.00			8,000	8,000
1	Allowance for Insulation on 4" KOH pipe	2920	ft					30.00	30.00			87,600	87,600
2	Allowance for Insulation on 4" KOH pipe	1080	ft					30.00	30.00			32,400	32,400
3	Allowance for Insulation on 4" KOH pipe	920	ft					30.00	30.00			27,600	27,600
4	Allowance for Insulation on 4" KOH pipe	300	ft					30.00	30.00			9,000	9,000
	TOTAL - Thermal & Moisture Protection											164,600	164,600



Eichle
Engineers Inc. of CA

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - LIVINGSTON UTILITIES

PRELIMINARY ESTIMATE

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

O:\30913\5.0 Design Documents\Estimates\Rev. 2\Living

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/UNIT	TOTAL MHR	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MATL	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	017 - Instruments & Controls												
	2% KOH equipment												
1	Conservation vents	2	ea	4	8	75.00	1,200.00		1,500.00	600	2,400		3,000
1	Relief vents	2	ea	2	4	75.00	3,000.00		3,150.00	300	6,000		6,300
1	Level transmitter & indicator	2	ea	4	8	75.00	1,200.00		1,500.00	600	2,400		3,000
1	High level switch	1	ea	2	2	75.00	500.00		650.00	150	500		650
1	Pressure gauge	6	ea	1	6	75.00	300.00		375.00	450	1,800		2,250
1	Pressure transmitter		ea			75.00	2,100.00		2,100.00				
1	temperature gauge & TW	6	ea	4	24	75.00	300.00		600.00	1,800	1,800		3,600
1	Temperature transmitter, RTD, TW	1	ea	4	4	75.00	1,200.00		1,500.00	300	1,200		1,500
1	Temperature control valve	1	ea	6	6	75.00	1,800.00		2,250.00	450	1,800		2,250
1	Relief valves	2	ea	2	4	75.00	300.00		450.00	300	600		900
1	Pressure regulator, liquid	1	ea	2	2	75.00	300.00		450.00	150	300		450
1	Pressure regulator, steam	1	ea	2	2	75.00	1,500.00		1,650.00	150	1,500		1,650
1	Sight glass	2	ea	4	8	75.00	1,000.00		1,300.00	600	2,000		2,600
1	Totalizing mass flow meter	2	ea	6	12	75.00	25,000.00		25,450.00	900	50,000		50,900
	CIP Instruments												
all	pressure gauge	158	ea	1	158	75.00	180.00		255.00	11,850	28,440		40,290
all	Install control valves for KOH & water lines	120	ea	2	240	75.00	250.00		400.00	18,000	30,000		48,000
all	Install conduit to valves	3000	ft	0.1	300	75.00	3.00		10.50	22,500	9,000		31,500
all	Install wire to valve	60	ea	1	60	75.00	5.00		80.00	4,500	300		4,800
all	Install dual manual switch at grade per tank	60	ea	1	60	75.00	120.00		195.00	4,500	7,200		11,700
all	Install conduit for power to switch	1000	ft	0.1	100	75.00	3.00		10.50	7,500	3,000		10,500
all	Install wire to switch	3000	ft	0.015	45	75.00	0.12		1.25	3,375	360		3,735
	TOTAL - Instruments & Controls				1053					78,975	150,600		229,575



Eichleay
Engineers Inc. of CA

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - LIVINGSTON UTILITIES

PRELIMINARY ESTIMATE

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	018 - Process Piping & Equipment												
	2% KOH equipment												
1	50% tank	1	ea	4	4	65.00	13,800.00		14,060.00	260	13,800		14,060
1	50% pump	1	ea	6	6	65.00	2,530.00		2,920.00	390	2,530		2,920
1	50% filter	2	ea	2	4	65.00	1,380.00		1,510.00	260	2,760		3,020
1	2% tank	1	ea	10	10	65.00	46,920.00		47,570.00	650	46,920		47,570
1	2% pump	1	ea	6	6	65.00	5,750.00		6,140.00	390	5,750		6,140
1	2% eductor	1	ea	10	10	65.00	1,150.00		1,800.00	650	1,150		1,800
1	2% heat exchanger	1	ea	4	4	65.00	2,990.00		3,250.00	260	2,990		3,250
1	2% filter	2	ea	2	4	65.00	1,840.00		1,970.00	260	3,680		3,940
1	Crane for installing KOH equipment	1	lot					3,000.00	3,000.00			3,000	3,000
	CIP Equipment												
1	Spray nozzles (ducting)	235	ea	2	470	65.00	250.00		380.00	30,550	58,750		89,300
1	Spray nozzles (KO Pots)	6	ea	2	12	65.00	300.00		430.00	780	1,800		2,580
1	Spray nozzels for main ducting	107	ea	2	214	65.00	250.00		380.00	13,910	26,750		40,660
1	Install sanitize Inductors for in main ducting	55	ea	2	110	65.00	300.00		430.00	7,150	16,500		23,650
1	Allowance for valves for KOH & water clean out	428	ea	4	1712	65.00	150.00		410.00	111,280	64,200		175,480
2	Spray nozzles (ducting)	235	ea	2	470	65.00	250.00		380.00	30,550	58,750		89,300
2	Spray nozzles (KO Pots)	6	ea	2	12	65.00	300.00		430.00	780	1,800		2,580
2	Spray nozzels for main ducting	116	ea	2	232	65.00	250.00		380.00	15,080	29,000		44,080
2	install sanitize inductors for in main ducting	58	ea	2	116	65.00	300.00		430.00	7,540	17,400		24,940
2	Allowance for valves for KOH & water clean out	464	ea	4	1856	65.00	150.00		410.00	120,640	69,600		190,240
3	Spray nozzles (ducting)	235	ea	2	470	65.00	250.00		380.00	30,550	58,750		89,300
3	Spray nozzles (KO Pots)	6	ea	2	12	65.00	300.00		430.00	780	1,800		2,580
3	Spray nozzels for main ducting	189	ea	2	378	65.00	250.00		380.00	24,570	47,250		71,820
3	install sanitize Inductors for in main ducting	95	ea	2	190	65.00	300.00		430.00	12,350	28,500		40,850
3	Allowance for valves for KOH & water clean out	756	ea	4	3024	65.00	150.00		410.00	196,560	113,400		309,960
4	Spray nozzles (ducting)	235	ea	2	470	65.00	250.00		380.00	30,550	58,750		89,300



Eichle
Engineers Inc. of CA.

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - LIVINGSTON UTILITIES

PRELIMINARY ESTIMATE

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
4	Spray nozzles (KO Pots)	6	ea	2	12	65.00	300.00		430.00	780	1,800		2,580
4	Spray nozzels for main ducting	178	ea	2	356	65.00	250.00		380.00	23,140	44,500		67,640
4	Install sanitize inductors for in main ducting	90	ea	2	180	65.00	300.00		430.00	11,700	27,000		38,700
4	Allowance for valves for KOH & water clean out	712	ea	4	2848	65.00	150.00		410.00	185,120	106,800		291,920
	Install sanitize system at each tank												
all	Install 1 1/2" PP pipe	4800	ft	0.3	1440	65.00	3.00		22.50	93,600	14,400		108,000
all	Install inductor	60		2	120	65.00	300.00		430.00	7,800	18,000		25,800
1 & 2	Allowance for a sanitize cart for main duct cleaning	2	ea					2,500.00	2,500.00			5,000	5,000
	Utility Equipment												
1	Air compressor, oil free, 180cfm, 50 HP	2	ea	10	20	65.00	42,000.00		42,650.00	1,300	84,000		85,300
1	Air dryer, reciever tank and filters, 180cfm	2	ea	10	20	65.00	14,200.00		14,850.00	1,300	28,400		29,700
1	Allowance to install 2" natural gas pipe	1060	ft	1.2	1272	65.00	5.00		83.00	82,680	5,300		87,980
1	Allowance for natural gas valves & fittings	1	lot				2,000.00		2,000.00		2,000		2,000
all	Allowance to install 2" air line feeding the VOC's	500	ft	1.2	600	65.00	5.00		83.00	39,000	2,500		41,500
all	Allowance for air line valves & fittings	1	lot				6,000.00		6,000.00		6,000		6,000
all	Allowance to install 2" local water line to each tank	1800	ft	1	1800	65.00	5.00		70.00	117,000	9,000		126,000
all	Allowance to install 2" valves & fittings for water line	60	ea	4	240	65.00	120.00		380.00	15,600	7,200		22,800
1	Allowance to install 3" water line to KOH / main rack	800	ft	0.6	480	65.00	6.00		45.00	31,200	4,800		36,000
1	Fab & install 4" KOH line for main duct for system 1	1180	ft	1	1180	65.00	50.00		115.00	76,700	59,000		135,700
1	Fab & install 4" KOH line for tanks in system 1	1740	ft	1	1740	65.00	50.00		115.00	113,100	87,000		200,100



Eichle
Engineers Inc. of CA

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - LIVINGSTON UTILITIES

PRELIMINARY ESTIMATE

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
2	Fab & Install 4" KOH line for main duct for system 2	330	ft	1	330	65.00	50.00		115.00	21,450	16,500		37,950
2	Fab & Install 4" KOH line for tanks in system 2	750	ft	1	750	65.00	50.00		115.00	48,750	37,500		86,250
3	Fab & Install 4" KOH line for main duct for system 3	160	ft	1	160	65.00	50.00		115.00	10,400	8,000		18,400
3	Fab & Install 4" KOH line for tanks in system 3	760	ft	1	760	65.00	50.00		115.00	49,400	38,000		87,400
4	Fab & Install 4" KOH line for main duct for system 4		ft			65.00	50.00		50.00				
4	Fab & Install 4" KOH line for tanks in system 4	300	ft	1	300	65.00	50.00		115.00	19,500	15,000		34,500
all	Fab & Install 2" drain to tank & ground from duct	60	ea	55	3300	65.00	2,100.00		5,675.00	214,500	126,000		340,500
all	Fab & Install 1" CIP line at each duct	60	ea	65	3900	65.00	4,700.00		8,925.00	253,500	282,000		535,500
1	Fab & Install 1 1/2" FRP piping	1	ea	48	48	65.00	4,000.00		7,120.00	3,120	4,000		7,120
1	Fab & Install 2" FRP piping	1	ea	34	34	65.00	2,500.00		4,710.00	2,210	2,500		4,710
1	Allowance for 4" ss pipe at KOH unit	1	lot	100	100	65.00	5,000.00		11,500.00	6,500	5,000		11,500
all	Allowance for small crane / fork lift for piping work	1	lot					20,000.00	20,000.00			20,000	20,000
	TOTAL - Process Piping & Equipment				31786					2,066,090	1,774,780	28,000	3,868,870

Client Name: Wine Institute

Job Number: 30913

Job Title: Fermenter VOC Emissions - LIVINGSTON UTILITIES

Eichle
Engineers Inc. of CA**PRELIMINARY ESTIMATE**

Estimated By: P.H.M.

Checked By: R.H.

Rev. 2 Date: 6/24/05

CODE	ITEM DESCRIPTION	QUANT	UNIT	MHR/ UNIT	TOTAL MHRS	UNIT COSTS				TOTAL COSTS			TOTAL
						\$ / Hr	MAT'L	SUBCON.	TOTAL	LABOR	MAT'L	SUBCON.	
	Contingency												
2.00	Site Construction					25%	25%	25%				2,338	2,338
3.00	Concrete					30%	30%	30%				24,315	24,315
4.00	Masonry					25%	25%	25%					
5.00	Metals					25%	30%	25%				5,000	5,000
6.00	Wood & Plastics					25%	25%	25%					
7.00	Thermal & Moisture Protection					25%	25%	25%				41,150	41,150
8.00	Door & Windows					25%	25%	25%					
9.00	Finishes					25%	25%	25%					
10.00	Specialties					25%	25%	25%					
11.00	Equipment					25%	25%	25%					
12.00	Furnishings					25%	25%	25%					
13.00	Special Construction					25%	25%	25%					
14.00	Conveying Systems					25%	25%	25%					
15.00	Mechanical HVAC & Plumbing					25%	25%	25%					
16.00	Electrical					35%	35%	35%		47,452	63,627	3,150	114,229
17.00	Instruments & Controls					30%	30%	30%		23,693	45,180		68,873
18.00	Process Piping & Equipment					35%	35%	35%		723,132	621,173	9,800	1,354,105
	Design Fee Allowance							35%				307,584	307,584
	Construction Management Allowance							30%				52,729	52,729
	Plan Check & Permit Fee Allowance							25%				452	452
	Third Party Inspection Allowance							25%				339	339
	ROUND OFF		1										
	TOTAL - Contingency									794,276	729,980	446,856	1,971,112

BACT 5.4.14 Attachment 2

Sizing and Purchase Costs for Control Devices

Carbon Adsorption Equipment Prices Based on Technical Assessment Document*

Equipment Capacity			Equipment Cost	
VOC System	RTO Capacity Basis SCFM (Eichleay Study)	Absorption Capacity Basis SCFM (Without Combustion Air)	1994 Cost (TAD)	Cost Escalated to 2008 at 3% per Year
1	16,000	12,900	\$268,655	\$419,000
2	22,000	17,800	\$305,546	\$476,000
3	13,000	10,500	\$247,914	\$386,000
4	13,000	10,500	\$247,914	\$386,000
Totals				\$1,667,000
* Technical Assessment Document p.77				

Water Scrubber Equipment Prices Based on STI Study*

Case			Site Specific, CIP, Maximum Vapor Rate	
VOC System	RTO Capacity Basis SCFM (Eichleay Study)	Absorption Capacity Basis SCFM (Without Combustion Air)	2003 Cost (STI)	Cost Escalated to 2008 at 3% per Year
1	16,000	12,900	\$63,822	\$99,000
2	22,000	17,800	\$71,387	\$111,000
3	13,000	10,500	\$59,411	\$93,000
4	13,000	10,500	\$59,411	\$93,000
Totals			0	\$396,000
* STI Study, p. 21				

Thermal Oxidizer Equipment Cost

Thermal Oxidizer Equipment Prices (Without Heat Recovery) Based on EPA Cost Manual Section 3.2, Chapter 2

Case		Equipment Cost	
VOC System	RTO Capacity Basis SCFM (Eichleay Study)	1988 Cost (EPA)	Cost Escalated to 2009 at 3% per Year
1	16,000	\$100,600	\$187,100
2	22,000	\$108,400	\$201,700
3	13,000	\$95,800	\$178,200
4	13,000	\$95,800	\$178,200
Totals			\$745,200

Regenerative Thermal Oxidizer Equipment Prices (95% Heat Recovery) Based on Quotations Received in Eichleay Study

Case		Equipment Cost	
VOC System	RTO Capacity Basis SCFM (Eichleay Study)	2005 Cost (EPA)	Cost Escalated to 2009 at 3% per Year
1	16,000	\$414,200	\$466,200
2	22,000	\$502,500	\$565,600
3	13,000	\$365,200	\$411,000
4	13,000	\$365,200	\$411,000
Totals			\$1,853,800

**Refrigerated Condenser Sizing with Equipment Cost Based on EPA Cost Manual
Section 3.1, Chapter 2**

VOC System	RTO Capacity Basis (Eichleay Study)	System Capacity less Combustion Air	Refrigerated Condenser Duty Btu/hour	Refrigerated Condenser Duty Tons	1990 Cost (EPA)	Cost Escalated to 2008 at 3% per Year
1	16000	12,900	3,909,000	326	\$430,200	\$754,400
2	22000	17,800	5,393,000	449	\$526,300	\$922,900
3	13000	10,500	3,182,000	265	\$378,100	\$663,000
4	13000	10,500	3,182,000	265	\$378,100	\$663,000
Total				1,306	\$1,027,200	\$3,003,300

Condenser Duty Calculation:

Condenser Duty Basis:	Inlet vapor stream contains a maximum of 16,000 ppmv ethanol at 86 F				
	Condensing Temperature is -12 F, 90% of Ethanol Condensed				
Latent Heat Ethanol	369	Btu/lb			
Vapor Heat Capacity	0.21	Btu/lb			
Latent Heat water	1060	Btu/lb			

Condenser Heat Balance Based on 100 moles of Inlet Vapor:

		Moles In	Moles Out		Enthalpy Change Btu/100 moles vapor	
		Vapor	Vapor	Liquid		
Ethanol Vapor		1.60	0.16	1.44	-24,594	
Water Vapor		4.20	0.00	4.20	-81,783	
CO2		94.20	94.20	0.00	-85,319	
Sub Total		100.00	94.36	5.64	-191,696	
Total		100.00	100.00		-191,696	
-191696	Btu/100 moles	=	-5.05	Btu/scf		

BACT 5.4.14 Attachment 3

Utilities and Other Annual Costs

Costs for Utilities and Other Annual Operating Expenses

Costs for utilities and other annual costs are summarized in the tables on the following two pages. The basis and calculation of the costs is presented below:

Natural Gas – applicable to Cases 1, 2 and 5 only

Case 1: Thermal Oxidizer with no heat recovery

The estimate is based on the Eichleay Study which estimated the annual fuel consumption for 95% thermally efficient oxidizers at 67,412 therms/year = 6,741 MMBtu/year. At a natural gas cost of \$8.00/MMBtu, the annual cost is $6,714 \times \$8.00 = \$53,900$ per year for all four regenerative thermal oxidizers with 95% heat recovery. Dividing by (1-95%) yields the fuel cost for a unit with zero heat recovery:

Case 1 Fuel Cost = $\$53,900 / (1-95\%) = \$1,078,000$ per year

Case 2: Regenerative Thermal Oxidizers

Case 2 is the Eichleay Study case. Therefore,

Case 2 Fuel Cost = **\$53,900 per year**

Case 5 – Carbon Adsorption

As calculated else where in this document, the carbon adsorption system will adsorb 350.62 tons per year of VOC's. Per the TAD, 11,800 lb of steam is required to recover 1 ton of ethanol. Given a boiler fuel requirement of 1,350 Btu/lb (based on absorbed boiler duty of 1,080 Btu/lb to produce 100 psig steam from 60 F water and an 80% combustion efficiency), annual fuel consumption for recovery of 350.62 tons ethanol per year is $11,800 \times 350.62 \times 1,350 / 10^6 = 5,585$ MMBtu/year.

Case 5 Fuel Cost = $5,585 \text{ MMBtu/year} \times \$8.00/\text{MMBtu} = \$44,700$ per year

Electric Power

Cases 1 and 2 – Thermal Oxidizers

For these cases, power consumption is considered to be only that for the ID fans. Per the Eichleay study, annual power consumption for the ID fans associated with the thermal oxidizers is 586 kw per hour for the 120 day crush season. Annual cost at a unit power cost of \$0.11/kwh is therefore

$586 \times 120 \times 24 \times \$0.11 = \$185,600$ per year

Cases 4 and 5 – Carbon Adsorption and Water Scrubber

As in cases 1 and 2 above, only the ID fan power will be considered for these cases. However, these cases do not have to handle the extra 23.6% combustion air. Therefore, the electric power cost for the thermal oxidizer case will be divided by 1.236 to reflect lower flow rates. On this basis, Cases 3, 4 and 5 have an annual power cost of

$\$185,600/1.236 = \$150,200$ per year (for cases 4 and 5)

Case 3 – Refrigerated Condenser

Electric power for this case includes the same ID fan power consumption as Cases 4 and 5 and also requires power for operation of the refrigeration unit. This case requires 1,306 tons of refrigeration for the design case and a utilization factor of 60 % will be assumed. Additionally, a coefficient of performance of 3.5 will be assumed for the equipment. Power demand for a 120 day operating season is thus:

$$60\% \times 1,306/3.5 \times 12,000 \text{ Btu/ton} \times 1 \text{ kW}/3,413 \text{ Btu} \times 120 \text{ days} \times 24 \text{ hr/day} \\ = 2,267,000 \text{ kWh/year}$$

At \$0.11/kWh, the cost for the refrigeration power is \$249,400. Adding \$150,200 for ID fan power (calculated above), total power cost for this case is **\$399,600 per year**.

Water Disposal Cost – applicable to Case 4 and 5 only

Case 4 – Water Scrubber

Water disposal requirements and costs for Case 4 (water scrubber) are taken from the STI Study:

- Water Disposal Required: 6 gpm for each 5000 scfm air flow for 90 day crush season.
- Disposal Cost: \$0.25/gallon

Total airflow for all four systems, corrected to subtract the combustion air, is $(16,000 + 22,000 + 13,000 + 13,000)/1.236 = 51,800$ scfm

$$\text{Wastewater Rate} = 51,800 \text{ scfm} \times 6 \text{ gpm}/5,000 \text{ scf} = 62 \text{ gpm}$$

$$\text{Annual wastewater generation} = 62 \text{ gpm} \times 90 \text{ days} \times 1,440 \text{ minutes/day} \\ = 8,035,000 \text{ gallons per year}$$

$$\text{Annual water disposal cost} = 8,035,000 \text{ gallons} \times \$0.25/\text{gallon} = \$2,008,800/\text{yr}$$

Case 5 - Carbon Adsorption

Wastewater is generated from the regeneration of the carbon bed. Per the TAD, 11,800 lb steam is required to recover 1 ton of ethanol. Given liquid densities of 8.34 and 6.61 lb/gallon for water and ethanol respectively, the amount of wastewater produced per ton of ethanol recovered is $(11,800/8.34) + (2,000/6.61) = 1,718$ gal/ton ethanol.

As calculated in this BACT analysis, the carbon adsorption unit will adsorb 350.62 tons per year of VOC's. Produced wastewater is therefore $350.62 \text{ tons} \times 1,718 \text{ gal/ton} = 602,400$ gallons per year.

Disposal cost at \$0.25/gal is $602,400 \times \$0.25 = \$150,600$ per year

Carbon Replacement Cost - applicable to Case 5 only

Per the TAD, activated carbon adsorbs 18% of its weight in ethanol. However, with regeneration, approximately 1/3 of the ethanol initially adsorbed stays on the carbon bed. In addition, due to the seasonal operation of a winery, the carbon is expected to have a lifetime of 10 years.

As calculated in this BACT analysis, the carbon adsorption unit will adsorb 350.62 tons per year of VOC's. Assuming this occurs over a 120 day crush season with three regenerations per day, the amount adsorbed per cycle is $350.62/(120 \times 3) = 0.97$ tons/cycle = 1,940 lb-VOC/cycle. Assuming a daily regeneration cycle and allowing for a dual bed for regeneration purposes, the amount of carbon required for the facility is $2 \times 1,940/(18\% \times .667) = 32,300$ lb carbon.

Given a cost of \$2/lb for carbon and annualizing the cost over the 10 year life,

Carbon Replacement Cost = $0.163 \times \$2.00 \times 32,300 = \$10,500$ per year.

Cooling Water Cost – applicable to Case 5 only (carbon adsorption)

Based on values presented in the TAD, the following parameters apply:

Cooling water consumption = 82,600 gallons of cooling water per ton of VOC adsorbed

Cooling Water Unit Cost = \$0.53 per 1000 gallons

Given 350.62 tons of VOC adsorbed per year, annual cost for cooling water is

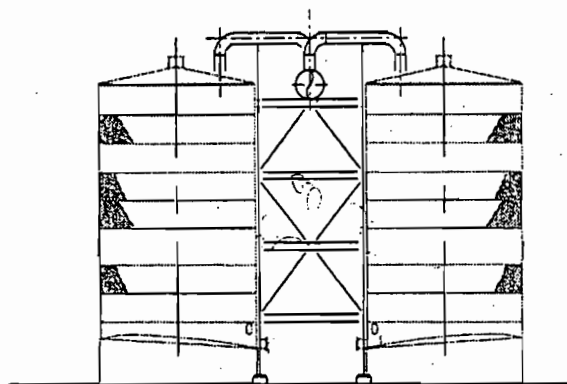
$82,600 \times 350.62 \times \$0.53/1000 = \$15,800$ per year

Utilities and Other Annual Costs

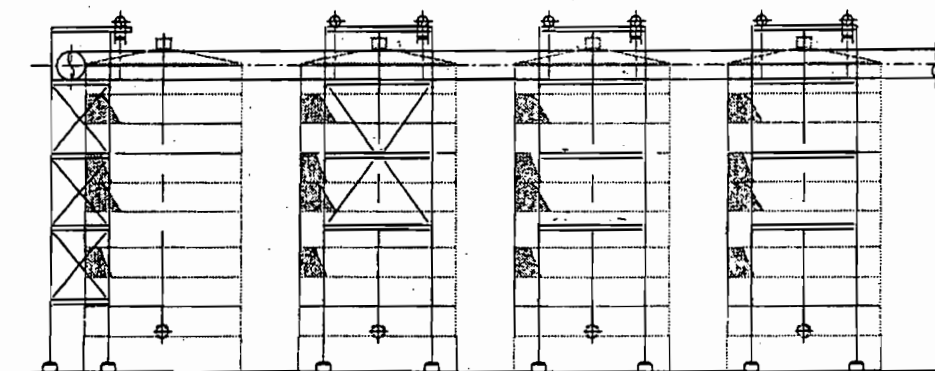
Control Device	Case 1 Thermal Ox	Case 2 RTO	Case 3 Refrigerated Cond.	Case 4 Water Scrubber	Case 5 Carbon Adsorption
Natural Gas	\$1,078,000	\$53,900	\$0	\$0	\$44,700
Electricity	\$185,600	\$185,600	\$399,600	\$185,600	\$185,600
Water Disposal	\$0	\$0	\$0	\$2,008,800	\$150,600
Cooling Water	\$0	\$0	\$0	\$0	\$15,800
Carbon Replacement	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$10,500</u>
Total	\$1,263,600	\$239,500	\$399,600	\$2,194,400	\$407,200

BACT 5.4.14 Attachment 4


Eichleay Drawings



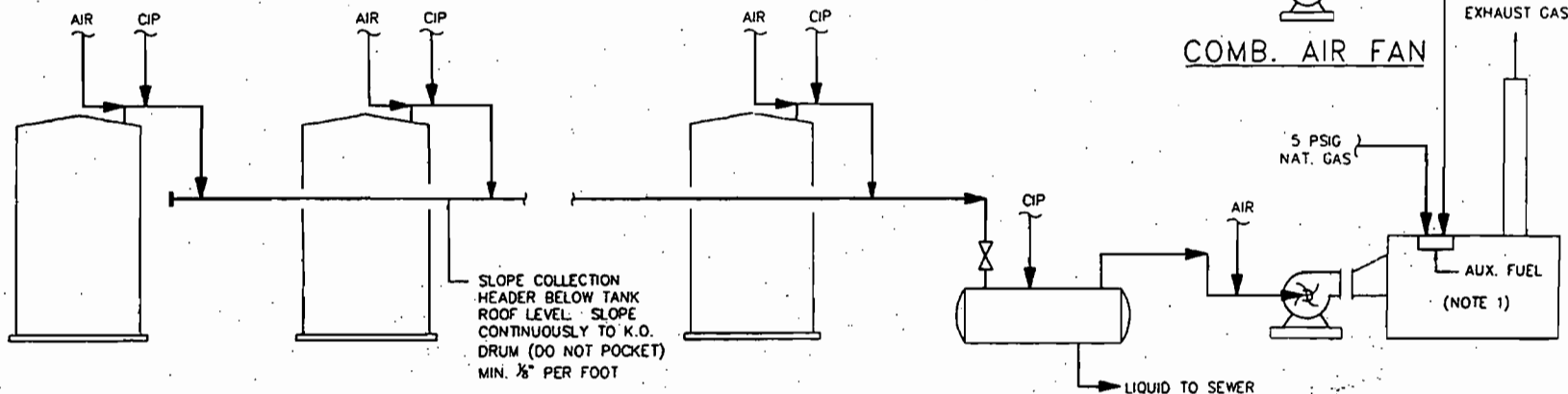
TYP. CROSS SECTION



TYPICAL LOGITUDINAL SECTION

		E. & J. GALLO WINERY 1000 N. 10th St. Orem, UT 84057		TYP. DUCT SUPPORT FRAMING DETAILS FERMENTER VOC ABATEMENT 2005		SK-S12
		DRAWN BY: [] CHECKED BY: [] DATE: []	DESIGNED BY: [] DATE: []	SCALE: [] DATE: []	REVISION: [] DATE: []	
REV. BY: [] DATE: []	DESCRIPTION: []	PROJECT: []	SHEET: []	TOTAL: []	DATE: []	SCALE: []


Eichleay
 6700 Wilson Pike Road, Suite 500, Evansville, IN 47712
 (715) 427-1000 • Fax: (715) 427-1001
 FAX 715 427 1001



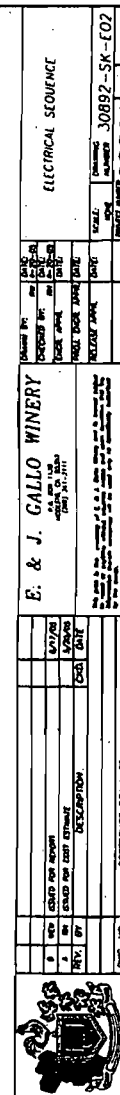
FERMENTER #1 FERMENTER #2 FERMENTER #n VAPOR/LIQUID SEPARATOR (K.O.DRUM) BLOWER RTO UNIT

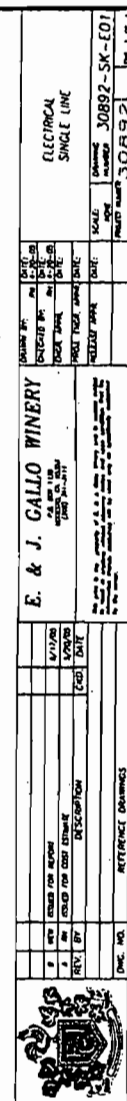
NOTES

1. RTO DILUTION AIR CONTROLS
 - A. ADD COOLING AIR AT $\geq 30\%$ LEL (9,840 PPM ETHANOL)
 - B. ADD COMBUSTION AIR TO MAINTAIN $\geq 4\%$ OXYGEN IN RTO VAPOR INLET
 - C. ADD SUPPLEMENTAL FUEL IF RTO VAPOR INLET IS $< 3\%$ LEL (984 PPM ETHANOL)

PROCESS FLOW DIAGRAM		FERMENTER VAPOR COLLECTION SYSTEM		SK-10892-003	
DATE	BY	DATE	BY	DATE	BY
DESIGNED BY	PL	DESIGNED BY	PL	DESIGNED BY	PL
CHECKED BY	PL	CHECKED BY	PL	CHECKED BY	PL
DATE	DATE	DATE	DATE	DATE	DATE
PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.	PROJECT NO.
REVISION NO.	REVISION NO.	REVISION NO.	REVISION NO.	REVISION NO.	REVISION NO.
E. & J. GALLO WINERY					
1000 E. MAIN ST. SUITE 100 ST. LOUIS, MO 63103 TEL: (314) 436-1000 FAX: (314) 436-1001 WWW.EJGALLO.COM					
REFERENCE DRAWINGS					
NO.	REV.	DATE	DESCRIPTION	BY	CHKD.
1					
2					
3					
4					
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7					
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9					
10					

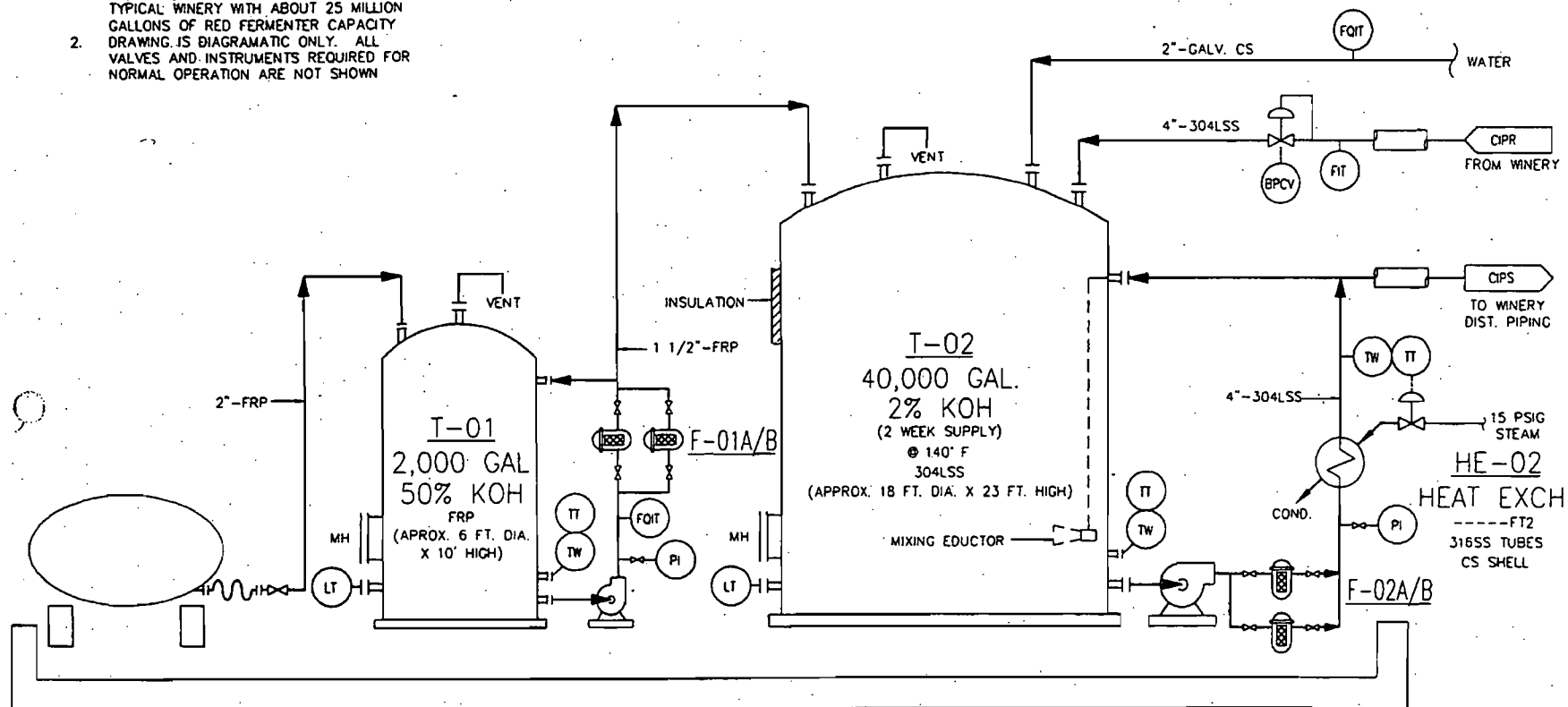






NOTES

- EQUIPMENT SIZES SHOWN ARE FOR A TYPICAL WINERY WITH ABOUT 25 MILLION GALLONS OF RED FERMENTER CAPACITY. DRAWING IS DIAGRAMATIC ONLY. ALL VALVES AND INSTRUMENTS REQUIRED FOR NORMAL OPERATION ARE NOT SHOWN.



TANK TRUCK

50% KOH

(DELIVER 1500 GAL. EVERY 2 WEEKS)

P-01

TRANSFER PUMP

20 GPM @ 50 FT.

50% KOH

FRP

1 HP

F-01A/B

50% KOH FILTER

RATED 20 GPM/150PSIG

FRP

20 MICRON

CONCRETE CONTAINMENT
WITH COATING
(APPROX. 40' X 60' X 2.5' CURB)

P-02

CIP PUMP

300 GPM @ 200 FT.

2% KOH

316SS

25 HP

F-02A/B

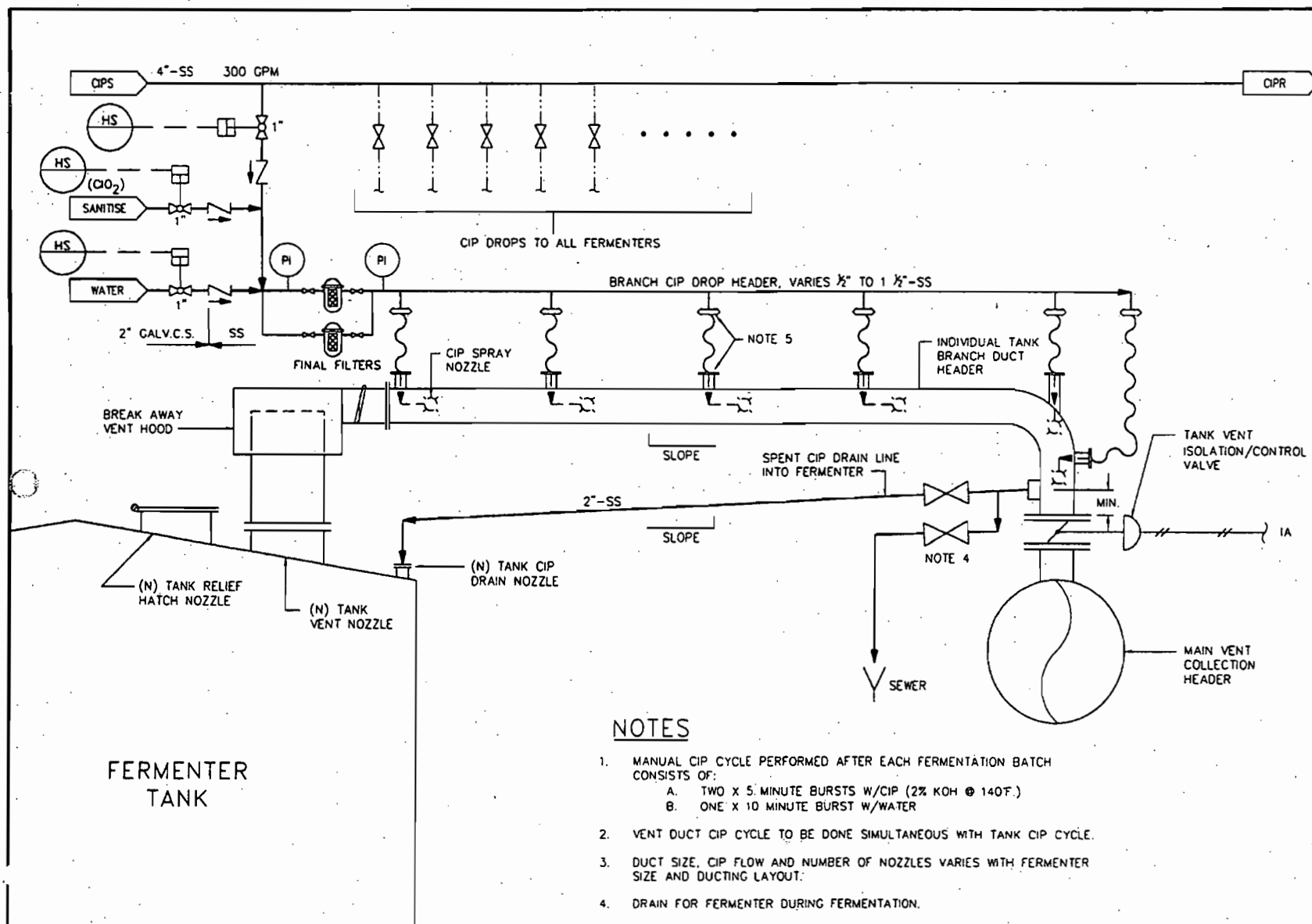
CIP FILTERS

RATED 300 GPM/150PSIG

304SS

20 MICRON

PROCESS FLOW DIAGRAM BULK CIP MAKE-UP FERMENTER W/OUT AGITATION		SCALE AS SHOWN	DATE 10/1/81	PROJECT NO. SK-30892-004	REV. 1 OF 1
E. & J. GALLO WINERY 1000 CALIFORNIA ST. SAN FRANCISCO, CA 94109		DESIGNED BY J. GALLO	CHECKED BY J. GALLO	DATE 10/1/81	REV. 1 OF 1
PROJECT NO. SK-30892-004		DATE 10/1/81	SCALE AS SHOWN	PROJECT NO. SK-30892-004	REV. 1 OF 1
PROJECT NO. SK-30892-004		DATE 10/1/81	SCALE AS SHOWN	PROJECT NO. SK-30892-004	REV. 1 OF 1
PROJECT NO. SK-30892-004		DATE 10/1/81	SCALE AS SHOWN	PROJECT NO. SK-30892-004	REV. 1 OF 1
PROJECT NO. SK-30892-004		DATE 10/1/81	SCALE AS SHOWN	PROJECT NO. SK-30892-004	REV. 1 OF 1
PROJECT NO. SK-30892-004		DATE 10/1/81	SCALE AS SHOWN	PROJECT NO. SK-30892-004	REV. 1 OF 1
PROJECT NO. SK-30892-004		DATE 10/1/81	SCALE AS SHOWN	PROJECT NO. SK-30892-004	REV. 1 OF 1
PROJECT NO. SK-30892-004		DATE 10/1/81	SCALE AS SHOWN	PROJECT NO. SK-30892-004	REV. 1 OF 1
PROJECT NO. SK-30892-004		DATE 10/1/81	SCALE AS SHOWN	PROJECT NO. SK-30892-004	REV. 1 OF 1



NOTES

- MANUAL CIP CYCLE PERFORMED AFTER EACH FERMENTATION BATCH CONSISTS OF:
 - TWO X 5 MINUTE BURSTS W/CIP (2% KOH @ 140°F.)
 - ONE X 10 MINUTE BURST W/WATER
- VENT DUCT CIP CYCLE TO BE DONE SIMULTANEOUS WITH TANK CIP CYCLE.
- DUCT SIZE, CIP FLOW AND NUMBER OF NOZZLES VARIES WITH FERMENTER SIZE AND DUCTING LAYOUT.
- DRAIN FOR FERMENTER DURING FERMENTATION.
- NOZZLES TO BE REMOVABLE FOR CLEANING AND MAINTENANCE.



Attachment E

BACT Guideline 5.4.13 Top Down VOC BACT Analysis for Wine Storage Tanks

Top Down BACT Analysis for VOC Emissions:

Step 1 - Identify All Possible Control Technologies

SJVUAPCD BACT Clearinghouse guideline 5.4.13, 1st quarter 2011, identifies achieved in practice BACT for wine storage tanks as follows:

- 2) Insulation or Equivalent**, Pressure Vacuum Relief Valve (PVRV) set within 10% of the maximum allowable working pressure of the tank; "gas-tight" tank operation; and continuous storage temperature not exceeding 75 degrees F, achieved within 60 days of completion of fermentation.

SJVUAPCD BACT Clearinghouse guideline 5.4.13, 1st quarter 2011, identifies technologically feasible BACT for wine storage tanks as follows:

- 5) Capture of VOCs and thermal or catalytic oxidation or equivalent (98% control)
- 6) Capture of VOCs and carbon adsorption or equivalent (95% control)
- 7) Capture of VOCs and absorption or equivalent (90% control)
- 8) Capture of VOCs and condensation or equivalent (70% control)

***Tanks made of heat-conducting materials such as stainless steel may be insulated or stored indoors (in a completely enclosed building, except for vents, doors and other essential openings) to limit exposure of diurnal temperature variations. Tanks made entirely of non-conducting materials such as concrete and wood (except for fittings) are considered self-insulating.*

SJVUAPCD BACT Clearinghouse guideline 5.4.13, 1st quarter 2011, does not identify any alternate basic equipment control alternatives.

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Rank	Control	Overall Capture & Control Efficiency ⁶
1	Capture of VOCs and thermal or catalytic oxidation	98 %
2	Capture of VOCs and carbon adsorption	95 %
3	Capture of VOCs and absorption.	90 %
4	Capture of VOCs and condensation	70 %
5	Insulated tank, pressure/vacuum valve set within 10% of the maximum allowable working pressure of the tank, "gas tight" tank operation and 75 °F tank temperature control as defined in District Rule 4694. (Achieved in Practice and Industry Standard)	0 %

⁶ Relative to "industry standard".

Step 4 - Cost Effectiveness Analysis

A cost-effective analysis is performed for each control technology which is more effective than meeting the requirements of District Rule 4694 plus tank insulation (achieved-in-practice BACT), as proposed by O'Neill. The cost-effectiveness analysis will be performed based on the following:

- Since the most cost effective approach will be achieved by installing a common control device for multiple tanks, the analysis will be based on this approach.
- To expand the scope and generality of this BACT, the cost-effectiveness analysis will be based on a hypothetical "industry-typical" storage tank operation consisting of a battery of twelve (12) storage tanks each with a capacity of 200,000 gallons. Total annual throughput for the hypothetical tank battery is 39.6 million gallons per year based on an individual annual throughput of 3,300,000 gallons per year each (equivalent to almost 17 turns per year of each storage tank versus an estimated industry average of 6 turns per tank⁷). Total throughput subject to VOC control by a common VOC control device is thus 39.6 MMgal/year. Based on economies of scale, it is obvious that any control found to not be cost-effective at this level of throughput would be even less cost-effective at lower capacities (such as proposed for this project with a total annual throughput of 5.95 million gallons per year).

Industry Standard

During the development of District Rule 4694, it was determined that use of pressure/vacuum valves and some level of refrigeration on wine storage tanks is a standard operation for large wineries in the San Joaquin Valley. Additionally, essentially all storage tanks are insulated. This was directly confirmed with four large wineries: Mission Bell (Madera), Gallo-Livingston, Bronco, and Robert Mondavi. Based on this, the wine storage tank VOC control requirements of District Rule 4694 and tank insulation are also determined to be "industry standard".

The emission factor for "industry standard" operation is determined based on Table 1 of the District's FYI-114, Estimating Emissions from Wine Storage Tanks (Appendix A), for an insulated storage tank with up to 20% ethanol content in the wine being stored:

E_f (industry standard) = 0.297 lb-VOC/1000 gal of wine throughput

Uncontrolled emissions for Twelve-Tank Battery

Uncontrolled Emissions = Gallons Throughput/year x 0.297 lb-VOC/1000 gallons
= $(39.6 \times 10^6 \text{ gal/year}) \times (0.297 \text{ lb-VOC/1000 gal})$

Uncontrolled Emissions = 11,761 lb/year

⁷ Per discussions with the Wine Institute (Bob Calvin of Constellation Wines) during Rule 4694 development (8/16/05)